DOCUMENT RESUME

ED 394 116 CG 026 968

AUTHOR	Van Der Hyde, Vincent A.; And Others
TITLE	ADATSA Follow-Up Study of Extended Outpatient Care: A Comparison of 90 Days versus 180 Days of Outpatient Treatment for Clients of Washington State's Alcoholism and Drug Addiction Treatment and Support Act.
INSTITUTION	Washington State Dept. of Social and Health Services, Olympia. Office of Research and Data Analysis.
REPORT NO	4-21
PUB DATE	Nov 95
NOTE	124p.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	Alcohol Abuse; *Alcoholism; *Drug Addiction; *Drug Rehabilitation; Human Services; *Outcomes of Treatment; Program Evaluation; Social Services; State Agencies; State Aid; *Substance Abuse
IDENTIFIERS	*Washington

ABSTRACT

This study was designed to compare outcomes for two groups of alcohol and substance abuse clients (N=230): a control group assigned to regular 90 days of outpatient treatment, and an experimental group assigned to 180 days of extended outpatient care. Outcomes were compared in the following nine categories: (1) relapse, measured as reported alcohol or drug use subsequent to treatment; (2) post-treatment employment; (3) living arrangements; (4) medical and physical problems; (5) psychiatric problems; (6) legal or criminal justice system problems; (7) family and social relationships; (8) treatment re-entry; and (9) participation in 12-step or other support programs. The major focus of the study was to determine if the additional 90 days of outpatient treatment impacted post-treatment outcome. While the results of the primary analyses were not positive, the findings consistently suggest that extended outpatient treatment, regardless of whether it is the scheduled treatment received by both controls and experiments, or the unscheduled treatment received by either group, is associated with some positive outcomes. From the analyses of both the 90 and 180 days follow up surveys, there are few consistent findings on the impact of extended outpatient care for the nine client outcome areas studied. The principal conclusion is that overwhelmingly, there is no major difference between 90 day treatment or 180 day treatment. Eight appendices present statistical analyses and other materials related to the study. Contains 39 references. (TS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 394 116

REPORT

ADATSA FOLLOW-UP STUDY OF EXTENDED OUTPATIENT CARE

A Comparison of 90 Days versus 180 Days of Outpatient Treatment for Clients of Washington State's Alcoholism and Drug Addiction Treatment and Support Act

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL
HAS BEEN GRANTED BY

T. BROWN

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

Washington State
Department of
Social & Health Services
Planning, Research & Development
Office of Research &
Data Analysis

CG026968

BEST COPY AVAILABLE

ADATSA FOLLOW-UP STUDY OF EXTENDED OUTPATIENT CARE

A Comparison of 90 Days versus 180 Days of Outpatient Treatment for Clients of Washington State's Alcoholism and Drug Addiction Treatment and Support Act

Vincent A. Van Der Hyde, M.A.
Sheku G. Kamara, Ph.D.
Eric A. Holman, B.A.
Debbie A. Clegg, B.A.
Brenden J. West, M.A.

November 1995

Office of Research & Data Analysis
Planning, Research and Development
Department of Social and Health Services

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

Jean Soliz, Secretary

BUDGET DIVISION

Wolfgang Opitz, Ph. D., Director

OFFICE OF RESEARCH AND DATA ANALYSIS

Timothy R. Brown, Ph.D., Chief
Sheku G. Kamara, Ph.D., Project Manager

In Conjunction with

DIVISION OF ALCOHOL AND SUBSTANCE ABUSE

Kenneth D. Stark, Director
Antoinette Krupski, Ph.D., Research Investigator
Jim Friedman, ADATSA Program Manager

When ordering, please refer to Report 4-21

TABLE OF CONTENTS

ACKNOWLEDGEMENTS iii

EXECUTIVE SUMMARY v

CHAPTER 1: INTRODUCTION 1

Purpose of the Study 3

CHAPTER 2: A REVIEW OF THE LITERATURE ON LENGTH OF TREATMENT AND OUTCOMES 5

CHAPTER 3: DATA AND METHODS 9

- A. Client Selection 9
- B. Client Interview Schedules 16
- C. Outcome Indicators 20
- D. Validity of Self-Report Questionnaire 20
- E. Data Analysis, Statistical Methods And Comparisons 20

CHAPTER 4: FINDINGS I: DIFFERENCES IN CLIENT CHARACTERISTICS, TREATMENT DROP-OUT, AND FOLLOW-UP ATTRITION 23

- A. Background Characteristics of Clients 23
- B. Treatment Drop-Out and Survey Contact Rates 28
- C. Characteristics of Clients At Discharge From Regular (90-Day) And Extended (180-Day) Treatment 29
- D. Attrition Rates During Follow-Up Interviews 32

CHAPTER 5: FINDINGS II: DIFFERENCES IN CLIENT OUTCOMES AT 90 AND 180 DAYS AFTER TREATMENT 37

- A. GROUP COMPARISONS 37
  - i. Analysis of Group Comparisons 37
  - ii. Duration of Treatment 37
  - iii. Summary 38

B. Analysis Based on Duration of Treatment 39
C. Univariate Logistic Regression Analysis 41
D. Summary 48

CHAPTER 6: CONCLUSION 53

A. Synopsis Of Study .: 53
B. Method 53
C. Findings 54
D. Discussion of Findings 61
D. Limitations 61
E. Implications 62
F. Program Recommendations 63
F. Recommendations for Further Research 63

REFERENCES 64

APPENDICES 69
Appendix I: Client Informed Consent Form 69
Appendix IIA: Outcome Indicators, Questions Asked in the Questionnaire and Differences Between Experimentals and Controls at Discharge, 90 Days, and 180 Days Follow-Ups 72
Appendix IIB: Frequencies and Percentages by Response Category at 90 and 180 Days Follow-Up 78
Appendix IIIA: Differences in Treatment Outcome at 90 Days Using Chi-Square and T-Test .. 82
Appendix IIIB: Differences in Treatment Outcome at 180 Days Using Chi-Square andT-Test . 82
Appendix IV: Logistic Regression Analysis 88
Appendix V: Multivariate Logistic Regression Analysis 90
Appendix VI: Background on New Standards 103

ACKNOWLEDGEMENTS

The success of this study depended entirely on the availability of clients and their willingness to participate in treatment and in the follow-up interviews. The clients interviewed were recruited from a number of alcohol and substance abuse treatment agencies in King, Pierce, Snohomish and Thurston Counties. These agencies were:

1. Central Seattle Recovery Center, Seattle.
2. The Center, Tacoma.
3. Plaza Hall, Tacoma.
4. Southwest Community Recovery Center, Burien.
5. Center for Human Services, Seattle.
6. Therapeutic Health Services, Seattle.
7. Evergreen Outpatient Services, Everett.
8. Eastside Alcohol Center, Bellevue.
9. TAMARC, Olympia.
10. Catholic Community Services, Everett.
11. The Outpatient Chemical Dependency Program of the Seattle Indian Health Board, Seattle.
12. Southeast Community Alcohol and Drug Center, Kent.
13. Stonewall Recovery Services, Seattle.

Thanks to all the clients who were recruited, especially those who responded to all the surveys. Thanks also to the agency personnel and treatment staff who helped with the logistics of recruiting clients and subsequently locating them. Without their help and cooperation, this study could not have been conducted.

The client interviews were conducted by CATOR/New Standards Inc., a leading national firm on alcohol and substance abuse survey, based in St. Paul, MN. Thanks to the staff and interveiwers, specifically, Norman Hoffman, Ph.D., Richard A. Kaplan, and Jackie Marquardt who were primarily responsible for implementing the surveys.

A number of other people in DASA provided assistance in records search to verify the type and amount of treatment clients received. Kenn Bailey and Stan Kowalkowski provided initial numbers. At the later stages of the research, Fritz Wrede and the TARGET client data system team, especially Dixie Grunenfelder, assisted in providing the numbers. Every client who was followed in the study was correctly accounted for and accurately tracked in TARGET through simple or multiple episodes of treatment. This reliability attests to the vast improvement in TARGET over SAMS. Thanks to the TARGET team and to all those who were involved in providing imformation for the study.

Within the Office of Research and Data Analysis, different people helped in different stages of the research. Special acknowledgement is made of the help provided by Jane Wingfield, and consultation provided by Dan Nordlund, Dario Longhi, Elizabeth Kohlenberg and Timothy Brown.

EXECUTIVE SUMMARY

BACKGROUND

The Division of Alcohol and Substance Abuse (DASA), an agency within the Washington State Department of Social and Health Services (DSHS), provides services to residents of Washington State through a number of programs. One such program, the Alcoholism and Drug Addiction Treatment and Support Act (ADATSA), provides alcohol and drug-related services to help indigent people recover from alcoholism and drug addiction. DASA funds these services through contracts with counties and agencies around the state. These entities provide treatment services to clients through a number of modalities and paths, typically consisting of residential treatment followed by outpatient treatment.

The Study

DASA has funded a number of evaluations on the effectiveness of the delivery of treatment services. Among the important issues emerging from these studies is the question of whether the current duration of outpatient treatment for indigent clients of the ADATSA program is adequate to help them to recover and ensure their return to productive living. To answer this question, the ADATSA Follow-Up Study of Extended Outpatient Care was designed to examine whether there were any differences in treatment outcomes between clients receiving 90 days (the typical amount) and those receiving 180 days (double the typical amount) of outpatient treatment. The results of such an investigation might help DASA to design effective programs for rehabilitating alcohol and drug addicts. If the duration of outpatient treatment has a clear and consistent effect on patient outcomes, then programs could be designed accordingly.

Outcomes

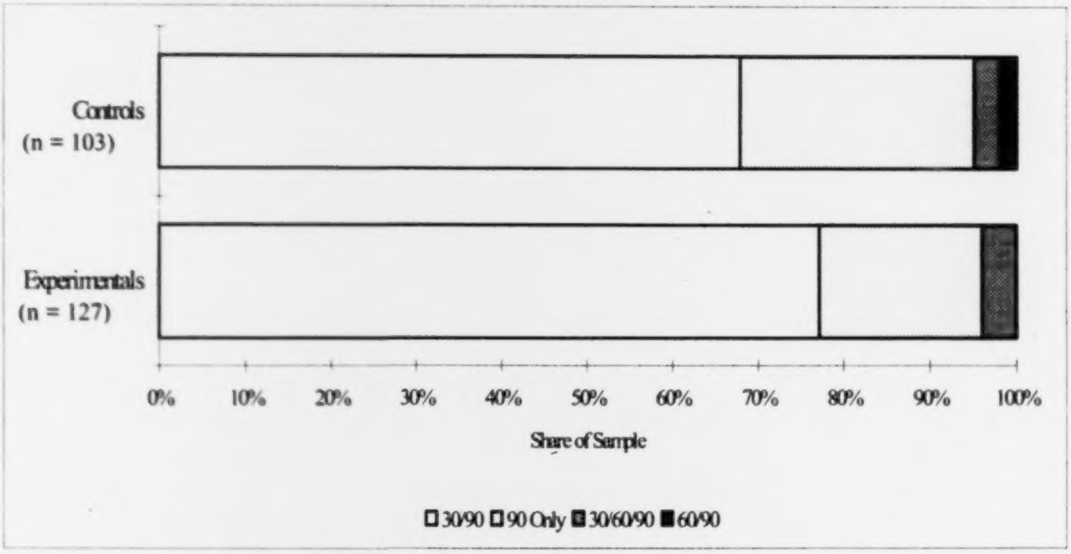
Nine major categories were identified to track outcomes after different levels of treatment:

1. Alcohol and drug use.
2. Employment
3. Living arrangements
4. Medical problems
5. Psychiatric problem
6. Legal problems
7. Family and social relationships
8. Treatment re-entry
9. Participation in 12-step programs

METHOD

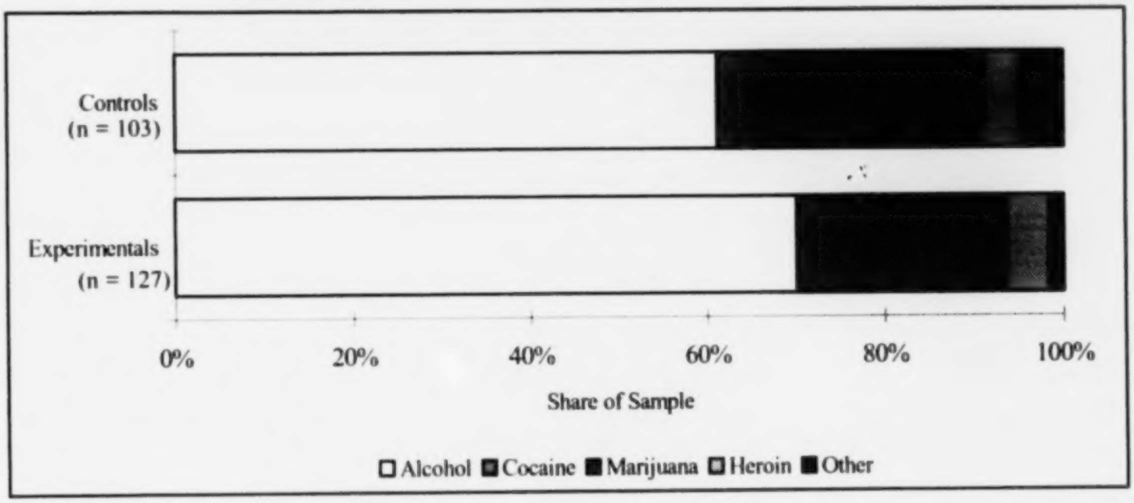
A sample of 230 ADATSA clients were recruited from 13 different treatment programs in western Washington. The majority of the sample (73%) was comprised of clients who had received 30 days of prior intensive inpatient treatment before outpatient care (Figure E1). Clients who had received no prior inpatient or outpatient treatment constituted 22.6% of the sample. The rest of the sample (4.4%) was comprised of clients from two other modalities: those who had received 30 days of inpatient followed by 60 days of recovery house prior to treatment, and those who received prior 60 days of recovery house treatment only.

Figure E1: Treatment Modalities of Sample Clients



About 66.5% of clients reported alcohol as their primary drug at admission to outpatient treatment, 20% reported cocaine, 6.5% reported marijuana, and the rest (7%) reported heroin or other drugs as their primary drug at admission (Figure E2).

Figure E2: Primary Drug at Admission



Randomization, Interviews and Consent Bias

Clients were randomly assigned to a control or experimental group. Controls received the regular 90 days of outpatient treatment and experimentals received the regular 90 days and were authorized for another 90 days of outpatient treatment for a possible total of up to 180 days. Both groups were interviewed at (1) discharge from treatment, (2) 90 days following discharge, and (3) 180 days after discharge. Data were collected from clinical records, the DASA Management Information System (TARGET), and client self-reports from phone surveys at the follow-up periods conducted by CATOR/ New Standards in St. Paul, MN. Through the contract with CATOR, clients were offered a gratuity of $10.00 dollars for every completed interview.

Both a consent bias analysis and a comparison of the background characteristics of clients were done in order to determine if the randomization procedure worked.

1. There was no significant difference between clients who participated and those who refused to participate. About 7.6% of the clients contacted refused to participate.

2. An analysis of data collected at the time clients were recruited showed that the two treatment groups did not differ significantly in their demographic characteristics and prior drug use.

These results confirmed that the randomization procedure was successful.

Analysis

Two main statistical methods were used to test for differences between the two groups. The chi-square test was used to analyze questions with categorical responses, and T-test for testing the means of continuous responses. For both types of tests, only differences significant at a probability less than or equal to 0.05 are reported. The second major statistical analysis used mostly in the analysis of outcomes was logistic regression, through which outcomes were regressed against a number of predictors.

FINDINGS

Survey Response Rates

About 78.6% of controls responded to the discharge survey, 70.9% to the 90-day follow-up, and 62.1% to the 180-day follow-up interviews (Figure E3). A consistently higher percentage of experimentals responded to the surveys: 88.2% at discharge, 82.7% at 90 days and 77.2% at 180 days after discharge.

Days of Treatment

Group assignment was intended to ensure that controls received only 90 days and experimentals 180 days of outpatient treatment. However, clients in both groups received additional, unscheduled treatment after discharge. As a result, controls received more than 90 days of outpatient care, but this did not invalidate the group assignments. As shown in Figure E4, the difference in total days of treatment (both scheduled and unscheduled) between the two groups was 62.5 days by the 90-day follow-up and 58.3 days by the 180-day follow-up. Both these numbers differ significantly from the average 90 days anticipated by the study.

Figure E3: Response Rates

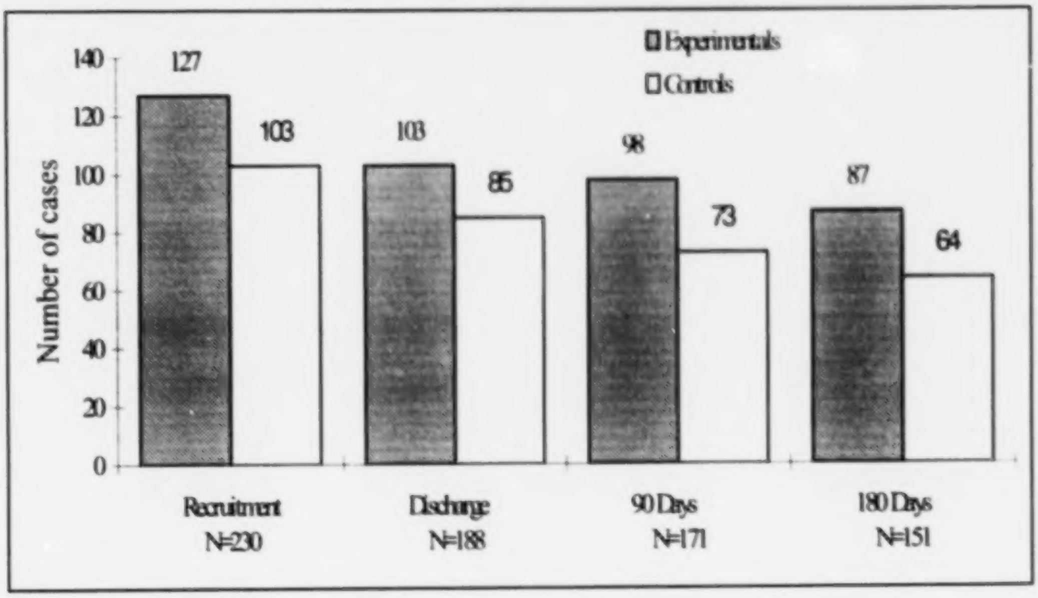
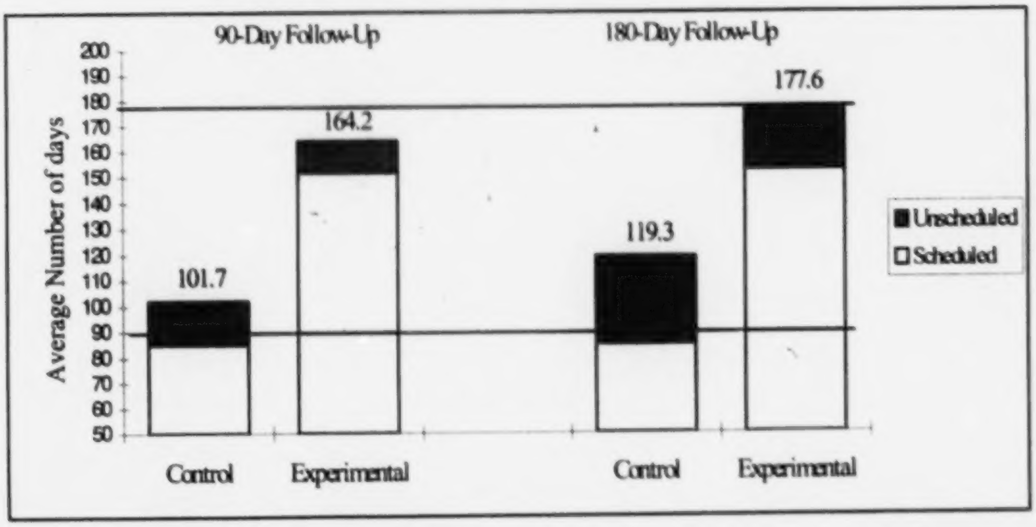


Figure E4: Total Outpatient Treatment Days



OUTCOMES

Alcohol and Substance Abuse

In terms of the numbers of clients who used alcohol or drugs at three or six months after treatment, there was no difference between clients who received the regular 90 days and those who received the extended (additional 90 days) outpatient treatment. However, clients who received extended treatment appeared to use less cocaine during the first 90 days follow-up and less painkillers during the 180 days follow-up than those who received regular outpatient treatment.

Employment

Additional outpatient treatment had no effect on increasing the number of clients getting employed. But of the few who were employed, those who received longer treatment had less problems with their boss both at the three months and six months follow-ups. Also at the six months follow-up, those who received longer treatment worked full-time for more months than those who received regular outpatient treatment.

Living Arrangement

Treatment duration did not have a major effect on the living arrangement of clients during the first three months after discharge. However, during the six months follow-up, more of the clients who received additional treatment lived with their spouse than those who received the regular treatment.

Medical Problems

Treatment duration did not affect the number of clients reporting medical problems, number of hospitalizations, or days spent in hospital. However, in the 3 months follow-up, more of the clients who received longer treatment visited the doctors office for illness, injury or surgery, whereas more of those who received regular outpatient treatment visited the doctors office for other reasons. In the six months follow-up, clients who received longer treatment made fewer visits to the doctor for illness, injury or surgery than those who received regular treatment.

Psychiatric Problems

There was no difference between clients who received regular outpatient treatment and those who received extended treatment in terms of the number of clients reporting psychiatric problems at both three and six months follow-ups.

Legal Problems

Duration of treatment did not affect the number of clients arrested or the number of arrests for DWI; speeding/moving violation; disorderly conduct; assault or battery; theft, robbery or burglary; vandalism/destruction of property; drug possession; or sale of drugs. Of the few arrested for other reasons besides these, more of the clients who received regular treatment were arrested, or reported being in jail overnight than those who received longer treatment.

Family/Social Relationships

In both the three months and six months follow-ups, treatment duration did not influence changes in the marital status or other social relationships of clients, except that more of those who received regular treatment described themselves as homemaker than those who received longer treatment.

Treatment Re-Entry

Treatment duration was related to clients' subsequent treatment re-entry and the type of treatment they re-entered. Fewer clients who received extended treatment came back to treatment than those who received regular treatment. All clients who re-entered treatment after receiving regular outpatient treatment, entered outpatient treatment. On the other hand, some clients who came back to treatment after receiving longer outpatient treatment, entered inpatient treatment.

Participation in 12-Step Program

Treatment duration was related to aftercare attendance and the number of days of aftercare at both three and six months follow-up periods. Clients who received longer outpatient treatment attended AA meetings more often than those who received shorter outpatient treatment.

CONCLUSION

A major factor in this study is that a substantial number of control subjects were able to receive additional treatment after the initial 90-day treatment period. Thus, the original design of the study was confounded as some controls received more treatment. The intended difference of 90 days treatment between these groups ended up being an actual difference only of 57 days. Consequently, statistical methods were used to adjust for the amount of treatment received. Given the duration of the study, this was not an adequate test whether a full 90 day additional outpatient services would be beneficial.

There were few consistent findings on the impact of extended outpatient care for the nine-client outcome areas studied. The principal conclusion is that there is no major difference between experimentals and controls. Specifically, comparing three outcome areas: the numbers of clients who relapsed on alcohol or drugs, those who gained employment, or those who had improved living situations, there were no differences associated with extended treatment.

However, the findings consistently suggest that extended outpatient treatment, regardless of whether it is the scheduled treatment received by both controls and experimentals, or the unscheduled treatment received by either group, is associated with some positive outcomes. For instance, experimental clients and those control clients who received additional unscheduled treatment were more likely to enroll in various programs that support recovery such as outpatient treatment, AA, and aftercare. They were also less likely to have spent a night in jail. In addition, clients who received longer outpatient treatment were more likely to visit a doctor's office, suggesting perhaps that they were more responsible than controls in taking care of their physical and medical problems, as opposed to going to the emergency room in a crisis resulting from neglect while they were actively engaged in their addiction.

Other findings which were consistent for both follow-up surveys were that clients who received longer treatment had fewer problems with their boss, and also more controls reported being homemakers than experimentals. These findings may indicate that clients who received longer treatment were more responsible in terms of looking for work outside the home, as well as having a better attitude towards their supervisors once they find work.

1

INTRODUCTION

THE DIVISION OF ALCOHOL AND SUBSTANCE ABUSE (DASA)

The Division of Alcohol and Substance Abuse (DASA), an agency within the Department of Social and Health Services, provides a number of alcohol and drug related services in the areas of prevention, public education and treatment. The goal of the programs is to reduce the likelihood of persons becoming chemically dependent, and to provide an opportunity for alcoholics and other drug addicts to recover. To provide these services, DASA:

1. Certifies all providers of alcohol and drug treatment services for compliance with the state minimum standards for alcoholism and drug addiction treatment programs.
2. Contracts with counties and service agencies to provide services to persons who cannot pay for the full cost of treatment. DASA does not provide treatment services directly. All services are provided through contracts.
3. Coordinates a comprehensive prevention program.

TREATMENT SERVICES FUNDED BY DASA

The basic treatment services funded by DASA include activities needed to maintain a systematic program of minimum cost and acceptable effectiveness in rehabilitating alcohol and drug addicts. The Alcoholism and Drug Addiction Treatment and Support Act (ADATSA) of 1987 established a program of treatment for indigent, unemployable alcoholics and drug addicts as a constructive alternative to maintaining these persons on the public assistance rolls. The ADATSA program provided for client assessment and placement in the appropriate course of treatment. Eligible persons are offered up to six months of treatment in a two-year period. ADATSA clients receive state funded medical services while in inpatient treatment, a clothing and personal incidentals allowance while in residential treatment, food stamps, and a living stipend while in outpatient treatment. The living stipend is $339 a month.

TREATMENT MODALITIES

The treatment regimen typically consists of residential treatment followed by outpatient treatment, and may include any combination of the following modalities:

1. Intensive Inpatient Treatment.
2. Recovery House Treatment.
3. Extended Care Recovery Treatment.
4. Long Term Treatment.
5. Intensive Outpatient Treatment.
6. Outpatient Treatment.

A client accesses services at any point in the continuum appropriate to their level of need, and is provided the services needed from admission through recovery. The basic continuum of treatment services includes diagnostic evaluation, client motivational counseling, primary treatment, and sobriety-maintenance follow-up counseling. In addition, self help groups are encouraged throughout and after the treatment phase.

A common sequence would be diagnostic evaluation, intensive inpatient treatment, recovery house, and outpatient counseling with interagency coordination of employment counseling. Employment skills, in particular, are emphasized.

ADATSA ADMISSION PRIORITY

Priority for admission to treatment from ADATSA waiting lists is given to the following:

1. Pregnant women.
2. Clients from families with dependent children.
3. IV drug users.
4. Child Protective Services referrals.

A further priority for outpatient treatment is given to persons in a continuum of treatment who have completed residential treatment. The flow of ADATSA clients into treatment paths is illustrated in Longhi et al. (1991, p. 7).

PURPOSE OF THE STUDY

PREVIOUS STUDY

One important component of effective alcohol and substance abuse treatment is the duration of different treatment modalities and paths. The previous Alcohol and Drug Addiction Treatment and Support Act (ADATSA) study (Longhi et al., 1991) reviewed different types of treatment services received by ADATSA clients and the programs serving them. The peer panel review section of that study reviewed the appropriateness of placing clients in different treatment paths and the duration of treatment in different phases. Among the important recommendations of the study was longer treatment, particularly for the outpatient modality. The panel agreed that the ADATSA Program should fully fund, or at least subsidize, twice as much treatment time as is currently funded. It was argued that outpatient clients have a particular need for extended treatment. Currently, ADATSA clients receive a maximum of 90 days of outpatient care out of the total maximum of 180 days of care available to them in a two-year period.

STUDY DESIGN

The ADATSA follow-up study of extended outpatient care was designed to address the duration of outpatient care as it impacts treatment outcomes, especially self-reported drug relapse and future employment. The study randomly assigned ADATSA clients to a control (90 days) and experimental (180 days) of outpatient treatment as the last modality in the continuum of care. Ninety days is the typical outpatient treatment duration. So experimentals were scheduled to receive double the outpatient treatment typically received.

OUTCOMES

Specifically, the study was intended to compare outcomes between the experimental and control groups at 90 and 180 days after discharge. That is, 90 and 180 days after discharge from the regular 90-day outpatient treatment for controls, and at 90 and 180 days after the extended outpatient treatment for experimentals. The two groups were compared across the following variables at those two follow-up periods:

1. Alcohol and substance use subsequent to treatment,
2. Post-treatment employment,
3. Living arrangements,
4. Medical/physical problems,
5. Psychiatric problems,
6. Legal problems (traffic violations, arrests, imprisonment etc.),
7. Family/social relationships,
8. Treatment re-entry, and
9. Participation in 12-step or other support groups.

Comparisons between experimental and control groups were limited because of sample size and statistical power considerations. While comparisons of the relationships between outcome and one, two, or more variables were made, comparisons looking at interaction effects between two or more variables relative to treatment outcome were not feasible because of the limited number of cases.

A REVIEW OF THE LITERATURE ON LENGTH OF TREATMENT AND OUTCOMES

2

LENGTH OF TREATMENT

A review article which concentrated on the relationship between length of treatment and outcome (Miller and Hester, 1986) found that "among studies of outpatient therapy, nonrandom (matching) designs have yielded modest advantages for longer versus shorter treatment, whereas studies employing random assignment controlled designs have found no advantage in more intensive treatment." In another review article, Baekeland and Lundwall (1975) caution that length of treatment is positively related to outcome in many cases, however the results are often confounded by other variables. The suggestion is that the wide variation in patient characteristics may overshadow treatment effects. It is also suggested that length of treatment may be a function of when abstinence occurs. That is, that a lack of abstinence during treatment may lead to a truncation of treatment, while those who were less abstinent received longer treatment in the hope of gaining success. This could lead to a false impression about the relationship between outcome and the length of treatment. Gottheil et al.'s (1992) study linked longer treatment times to better outcomes for a veterans inpatient program only in the case of the less severely impaired.

CONTROLLED STUDIES

There have been at least three major well controlled follow-up studies on clients receiving drug abuse treatment. The first was the Drug Abuse Reporting Program 1969-1973 (DARP), followed by the Treatment Outcomes Prospective Study (TOPS) and more recently the Drug Abuse Treatment Outcomes Study (DATOS). Results from DATOS have not yet been released. TOPS (Hubbard et al., 1989; Hubbard et al., 1984) was more comprehensive than DARP. It built on the design and methodology of DARP (Williams, 1975), and provides a good basis for comparing substance abuse clients both during and after treatment.

TOPS used both self-report survey data and official records with prospective cohorts of comparison and control groups, and conducted both a descriptive and correlational assessment of client behavior. TOPS recruited clients through many different drug treatment programs (outpatient, detox, methadone maintenance, residential drug free, and outpatient drug free) in ten cities. (Portland, OR was the only city selected from the Pacific Northwest).

OUTCOMES

Among the follow-up periods in the TOPS study was a 90-day post-discharge follow-up interview, focusing on 5 outcomes: (1) substance use, (2) illegal activity, (3) employment/economic behavior, (4) mental health (depression problems), and (5) treatment retention/completion.

Results from the TOPS Study (Hubbard et al., 1989) found that about 25% of outpatient clients received treatment during follow-up. Clients who received more treatment during follow-up reported better outcomes. The descriptive results of TOPS showed improvement in drug use, criminal behavior, depression and full-time employment for all modalities, and these outcomes were correlated with duration of treatment.

The DARP study found that in a 1 year follow-up after discharge, 21% of the clients did not use any illicit drugs at all (Simpson and Sells, 1983). Among outpatients, employment (any) was found to increase slightly from 60% during pre-treatment to 65% at post treatment.

Criminal Justice Involvement

The DARP study also found that client involvement with the criminal justice system improved significantly. Clients arrested dropped from 87% to 34%, while clients jailed or imprisoned declined also from 66% to 34%. With respect to vocational functioning, there was only a slight increase in the number of people working full time through the first twelve months after treatment (77% for men and 35% for women) compared to the year before treatment (72% for men and 39% for women). However, absenteeism related to substance abuse among workers declined from 33% in the year before treatment to 3% in the year after treatment.

Arrests after treatment declined markedly from 17.6% the year before to 2% the year after treatment. The proportion of clients reporting emotional stress dropped from about 50% to 30% among men and from about 70% to 40% among women.

Length of Treatment and Abstinence

The initial analysis of DARP data (Simpson, 1979) for the first year of follow-up found a positive relationship between length of treatment and outcome. Clients who spent less than 3 months (90 days) in outpatient treatment showed no difference in outcomes from those who received detox only or from those who received no treatment after initial intake. Several months of treatment (at least 3) appeared to be necessary before outcomes differed significantly from those of untreated clients, or those of clients with less than 90 days treatment. This relationship was not significant under 90 days, but was linear between 90 days and 2 years.

Frequency of outpatient clinic attendance was observed to be related to an improvement in the drinking status of alcohol patients (Verinis and Foreman, 1992). But this outcome does not appear until after a month or more of treatment. However, a random clinical trial of 152 clients found no greater abstinence by clients who received a single session of counselling as compared to those who received extended inpatient or extended outpatient treatment (Chick et al., 1988). Patient characteristics rather than treatment program characteristics were more highly related to outcome.

VALIDITY OF SELF REPORT DATA

In discussing the pros and cons of self-report data, Fuller (1988) indicates that a consensus has developed that self-reports alone often do not provide sufficient data by which to evaluate treatment outcome. He notes that problems of recall or of clients wanting to give socially acceptable answers may occur. The result may be a systematic under-reporting of the behavior. For example, Aiken (1986) noted that after eight months of treatment, clients reported higher pre-treatment levels of use than they had at the time of intake. This can make treatment gains harder to detect.

Embree and Whitehead (1991) report that responses vary according to how the question is asked. Some questions may be framed so as to assist in recall or in a way to mitigate the effects of a respondent trying to provide a socially desirable response. Their view of the validity of self reports is that "it depends."

On the other hand, Miller (1988) states that the belief that alcoholics consistently underestimate or lie about their drinking has little support from research data. Similarly, O'Farrell and Maisto (1987) report, in a review of the literature, that neither the widespread skepticism about alcoholics' self-reports nor systematic underreporting bias is supported by the literature except when alcoholics have a positive blood alcohol level. Evidence shows reliable and valid reports for hospital/jail stays and frequency of drinking/abstinence, including reliable and modest agreement with collateral informants for measures of problem severity and alcohol dependence symptoms (O'Farrell and Maisto, 1987).

Some studies report concurrent validity between 80% and 97%, while others report much lower figures. At least four factors seem to influence concurrent validity; ambiguity in the question, the test statistic used in the analysis, the "salience" (impact or importance) of the item, and "base rate" or actual incidence of the behavior in the population being studied. Questions relating to behavior that had a low base rate were perceived as important by the respondent. When analyzed using two statistical techniques (Kappa and Yule's Y), a higher concurrent validity resulted.

3

DATA AND METHODS

CLIENT SELECTION

SAMPLE SIZE AND STATISTICAL POWER ANALYSIS

A statistical power analysis (Cohen, 1988) was conducted to determine the minimum number of clients required for each group. Statistical power, the ability to detect a given level of treatment effect at a specified statistical significance level, was based on a sample size that could detect a "medium" treatment effect equivalent to one-half a standard deviation unit, at least 80% of the time and a significance level of 0.05. Based on these criteria, at least 64 completed interviews in each group were required for analysis.

A larger number of clients were needed at the beginning of the study to allow for treatment drop out and attrition during the follow-up period. The minimum sample size of 64 only supports an analysis of main effects. More complex analyses, looking at the interactive effects of combinations of two or more independent variables on an outcome variable, require significantly more clients in order to produce meaningful results.

RECRUITMENT OF CLIENTS

The outpatient treatment agencies selected for the study consisted of a convenience sample taken from King, Pierce, Snohomish and Thurston counties in western Washington. In cooperation with DASA the thirteen largest programs were contacted (Table 1) in order to determine the number of clients per month completing the treatment path consisting of 30 days of intensive inpatient, followed by 60 days of recovery house, and 90 days of outpatient care. This is usually referred to as the 30/60/90 treatment path. Based on lists of admissions to the outpatient programs the number of clients available in this path for the three months period of recruitment was smaller than that needed for the study. A different treatment path consisting of 30 days intensive inpatient services and 90 days of outpatient (30/90) was finally selected instead of the 30/60/90 path.

Table 1: TREATMENT AGENCIES AND CLIENT RECRUITMENT: CONSENTING AND NON-CONSENTING CLIENTS

	Treatment Agency	Location (City/County)	Range Of Services	Non-Consenting Clients	Consenting Clients						Total
					1		2		Total		
					C	E	C	E	C	E	
1	Central Seattle Recovery Center	Seattle / King	Outpatient - Alcohol/Drug		11	32	16	5	27	37	64
2	The Center	Tacoma / Pierce	Outpatient - Alcohol/Drug		14	19	10	3	24	22	46
3	Plaza Hall	Tacoma / Pierce	Inpatient - Alcohol/Drug Outpatient - Alcohol/ Drug	4	11	13	4	10	15	23	38
4	Southwest Community Recovery Center	Seattle / King	Outpatient - Alcohol/Drug	1	8	13	4	2	12	15	27
5	Center For Human Services	Seattle / King	Outpatient - Alcohol/Drug		9	6	3	3	12	9	21
6	Evergreen Outpatient Services	Everett / Snohomish	Outpatient - Alcohol/Drug Detoxification - Alcohol/Drug Rec House - Alcohol/Drug			2	3	5	3	7	10
7	Therapeutic Health Services	Seattle / King	Outpatient - Alcohol/Drug	3	1	3	4	2	5	5	10
8	Eastside Alcohol Center	Bellevue / King	Outpatient - Alcohol/Drug		1	1	3	3	4	4	8
9	Tamarc	Tumwater / Thurston	Outpatient - Alcohol/Drug	3		3	1		1	3	4
10	Catholic Community Services	Everett / Snohomish	Outpatient - Alcohol/Drug			2			0	2	2
11	Seattle Indian Health Board	Seattle / King	Outpatient - Alcohol						0	0	0
12	Southeast Community Alcohol & Drug	Kent / King	Outpatient - Alcohol/Drug	3					0	0	0
13	Stonewall Recovery Sevices	Seattle / King	Outpatient - Alcohol/Drug	5					0	0	0
	Total			19	55	94	48	33	103	127	230

1 - Nov. 1992 - March 4, 1993 = only 30/90 clients were assigned

2 - March 5 - April 15, 1993 = All clients completing 90 days (including 30/90, 30/60/90, 60/90, and 90 only)

C = Control

E = Experimental

A list of clients admitted to these programs in the 30/90 path during the months of August, September and October 1992 was developed. The clients were scheduled to complete the 90 days of outpatient care in November and December 1992, and January 1993 respectively. Program counselors in the 13 agencies (Table 1) were asked to identify ADATSA clients as they entered the 70th to 78th day of outpatient treatment, and then ask clients meeting eligibility requirements about their willingness to participate in the study. An Informed Consent form was developed, discussed in detail with and signed by each willing participant.

The number of potential clients available in the 30/90 pool was again much smaller than was anticipated. After recruiting clients through February, it became necessary to modify the eligibility requirements to accept any client who was completing a 90-day outpatient treatment path through April 15, 1993, regardless of prior treatment. The result was that all of the clients enrolled in the study up until March 5, 1993 were part of the 30/90 treatment path. These clients were 55 controls and 94 experimentals. Clients enrolled between March 5 and April 15, came from any treatment path that included, as its final modality, the 90 days of outpatient care. These additional clients were 48 controls and 33 experimentals. Thus, the

Table 2: Treatment Modalities

Treatment Path	Exp.	Control	Total Clients
30 days inpatient / 90 days outpatient	98	70	168
90 days outpatient only	24	28	52
30 days inpatient / 60 days recovery house / 90 days outpatient	5	3	8
60 days recovery house / 90 days outpatient	0	2	2
Total	127	103	230

recruitment of clients began in November 1992 and ended on April 15, 1993 (Table 1).

Table 2 shows the distribution of clients recruited by treatment path. A total of 230 individuals were randomly assigned with 103 controls and 127 experimentals. About 96% of the clients recruited were either from the 30/90 or 90-day modalities.

The outpatient admissions lists previously described provided the base-line for ensuring that all eligible clients were contacted, as well as for identifying refusals and drop-outs. The admissions lists also confirmed the rate at which individuals became available for the study, although due to different admissions recording procedures in the different programs, a few clients were detected who had not been reported on the admissions lists.

ASSIGNMENT TO EXPERIMENTAL AND CONTROL GROUPS

Before consenting to the study, clients were not informed whether they would be included in the experimental or control group. After informed consent was obtained, the counselor was instructed to contact project staff immediately with relevant descriptive information about the client. A randomization procedure was developed based on an algorithm utilizing the client's social security number. The technique was adjusted to include a greater proportion of clients in the experimental group to compensate for their anticipated higher dropout rate during the additional 90 days of outpatient treatment.

Both the control and experimental groups were comprised of clients whose last treatment modality was 90 days of ADATSA outpatient treatment. The controls were not scheduled for any additional treatment. Clients in the experimental group, without being discharged, were continued on to receive an additional 90 days of outpatient treatment. During the total 180 days of their outpatient treatment, experimental clients received full ADATSA outpatient care including the monthly subsistence stipends that all ADATSA clients normally receive during outpatient care.

CONFIDENTIALITY AND CONSENT BIAS ANALYSIS

Clinical records of clients in treatment are rigorously protected by both state and Federal laws. In order for the research project to gain access to these records, the clients were required to sign the Informed Consent form (see Appendix 1). Initial contact with the prospective client was obtained via the drug or alcohol counselor at the outpatient program in which the client was enrolled. The counselor was instructed to discuss the Informed Consent form with the client to ensure their understanding of both the risks and benefits of the research. As part of the informed consent process, the client was also asked to provide the name, address and telephone number of three other persons who could be helpful in locating them in the event that their telephone number or address changed during the 6 to 9 months follow-up interview period. As an added incentive to participate in the study, clients were offered a gratuity of ten dollars for each completed follow-up interview. These measures were designed to increase the ability of interviewers to locate individuals after their treatment. As shown in the footnote on Table 3, 92.4% consented to participate in the study.

NO SIGNIFICANT DIFFERENCE BETWEEN CONSENTERS AND NON-CONSENTERS

Consent bias may be seen as one form of selection bias. It refers to the introduction of a bias which may occur when clients, who are otherwise eligible for a study, refuse to participate in the research.

A chi-square analysis was performed comparing those who consented to take part in the study with those who refused. These two groups were compared across the variables shown in Table 3. In no case was a statistically significant difference found at the p=.05 level of significance or better for the common Pearson chi-square statistic. Statistical significance at or close to the .06 level was found in two cases, "tertiary drug", and "jobs in last six months".

These findings indicate that there are no significant differences between those individuals who did not consent to participate in the study and those who did. It should also be noted that the small number of non-consenting individuals may render the chi-square test a less robust measure than could be desired.

Table 3: Summary of Consent Bias Analysis

	CONSENTED	REFUSED		
Variable	N	N	X^2	P
Age	230	19	2.06	0.560
18-21	10	2		
22-30	70	7		
31-50	142	10		
50+	8	0		
Mean & Standard Deviation				
Gender	230	19	0.311	0.577
Male	182	14		
Female	48	5		
Race	230	19	4.198	0.178
White	158	14.0		
Black	49	2		
Native American	12	3		
Other	8	0		
Ethnicity	230	19	1.182	0.881
Non-Hispanic	208	19		
Hispanic	22	0		
Marital Status	230	19	1.132	0.287
Single/Non-Married	211	16		
Married	19	3		
Education	230	19	0.523	0.770
< 12 years	103	7		
H.S. Diploma/GED	84	8		
Post HS Diploma/GED	43	4		
Mean & Standard Deviation				
Veterans Health Benefits	230	19	0.339	0.844
Yes	4	0.0		
No	212	18.0		
Unknown	14	1		
Private Health Benefits	230	19	0.255	0.613
Yes	0	0		
No	223	19		
Unknown	7	0		
Living Arrangements	230	19	7.198	0.303
Alone	71	3		
With Relatives	60	6		
Unrelated Household	81	10		
Homeless Shelter	10	0		
Unknown	8	0		
Primary Drug	230	19	5.906	0.116
Heroin	10	3		
Alcohol	153	12		
Cocaine	45	3		
Marijuana	15	0		
Other	7	1		

Table 3 Cont.: Summary of Consent Bias Analysis

Variable	CONSENTED	REFUSED		
	N	N	X^2	P
Secondary Drug	230	19	6.523	0.163
Heroin	6	2		
Alcohol	53	1		
Cocaine	34	3		
Marijuana	47	5		
Other	14	2		
No secondary drug	76	6		
Tertiary Drug	230	19	9.030	0.060
Heroin	3	0		
Alcohol	6	3		
Cocaine	21	1		
Marijuana	28	1		
Other	30	1		
No Tertiary Drug	142	13		
Year of Primary Drug Use	230	19	4.935	0.177
< 5 years	12	3		
5 - 10	38	2		
11 - 15	39	5		
> 15	141	9		
Mean & Standard Deviation				
Criminal Justice Referral	230	19	0.026	0.873
Yes	66	5		
No	145	12		
Unknown	19	2		
Probation/Parole Status	230	19	1.077	0.299
Yes	76	4.0		
No	135	13		
Unknown	19	2		
Ever Arrested	230	19	2.344	0.126
Yes	186	13		
No	23	4		
Unknown	21	2		
Jobs last 6 months	230	19	5.562	0.062
One	48	7		
Two or More	. 25	0		
None	157	12		
Mean & Standard Deviation				
Medical/Psych. History	230	19	0.023	0.881
Yes	67	5		
No	148	12		
Unknown	15	2		

DATA COLLECTION

Data for this study were obtained from three sources. Information on the client at the time of admission was obtained from the clinical records maintained by the outpatient providers. This included basic demographic data and prior treatment and substance abuse history.

Follow-up data were obtained through the four telephone surveys using the CATOR/New Standards telephone questionnaire. The same basic questionnaire was used in each survey.

Data on additional unscheduled treatment received by clients during the post-treatment period were obtained from the Treatment and Assessment Report Generation Tool (TARGET), the successor to the Substance Abuse Management System (SAMS). This is the primary alcohol and substance abuse treatment data system owned and operated by DASA.

CLIENT INTERVIEW SCHEDULES

RECRUITMENT

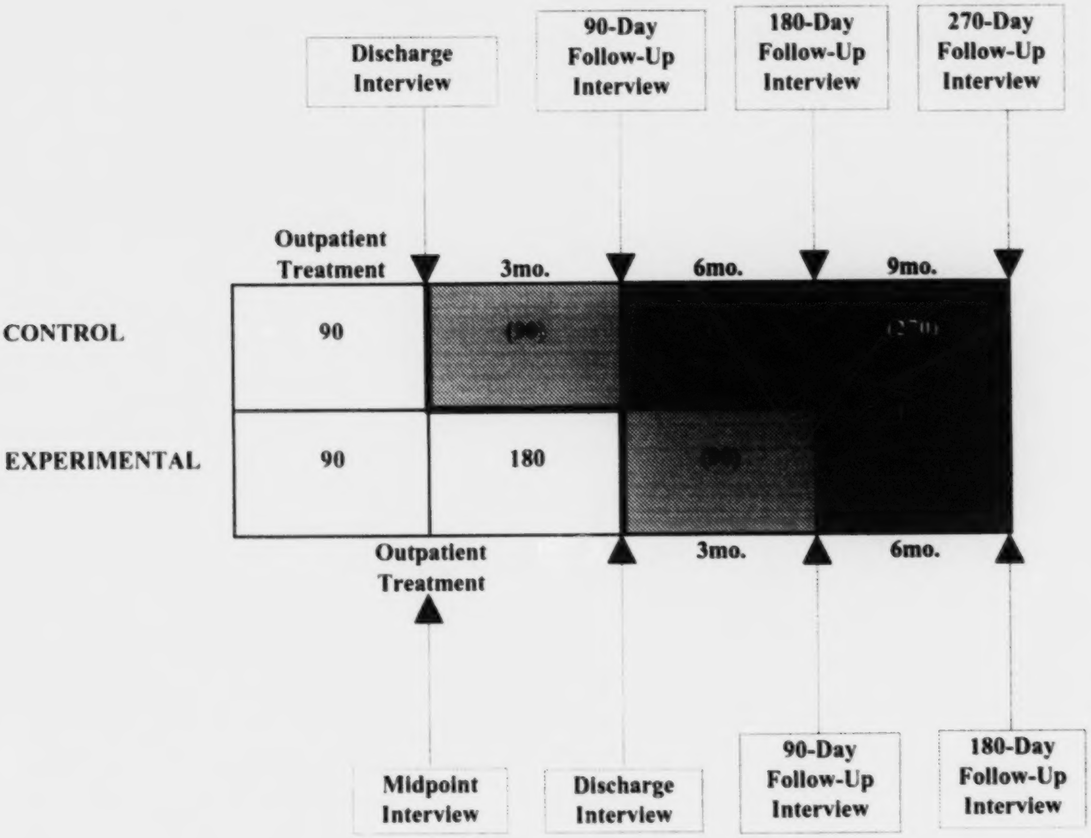
Clients for the study had started 90-day outpatient care between August 1, 1992 and January 30, 1993. They were recruited for the study between the 70th and 78th day of outpatient care, i.e., from November 1, 1992 through April 15, 1993, and placed into either control or experimental group (Figure 1).

FOLLOW-UP SCHEDULE

Four structured telephone follow-up interviews were scheduled for both the control and experimental groups.

1. The first interviews were scheduled to be conducted at discharge from regular outpatient care for controls, and the same time that experimentals were completing the first 90 days of their extended treatment. These interviews were scheduled to be conducted from November 1, 1992 to May 7, 1993.

Figure 1: INTERVIEW PERIODS


Discharge Interview
90-Day Follow-Up Interview
180-Day Follow-Up Interview
270-Day Follow-Up Interview
Outpatient Treatment
3mo.
6mo.
9mo.
CONTROL
90
(90)
(270)
EXPERIMENTAL
90
180
(90)
Outpatient Treatment
3mo.
6mo.
Midpoint Interview
Discharge Interview
90-Day Follow-Up Interview
180-Day Follow-Up Interview

2. The second interviews, 90-day post discharge follow-up for controls and discharge from extended outpatient for experimentals, were scheduled to take place between February 1 and August 7, 1993.

3. The third interviews, 180-day post discharge follow-up for controls and 90-day post discharge follow-up for experimentals, were scheduled for May 1 through November 7, 1993.

4. The fourth and final interviews, 270-day follow-up for controls and 180-day follow-up for experimentals, were scheduled from August 1, 1993 through February 7, 1994.

BEST COPY AVAILABLE

CATOR/ NEW STANDARDS

The responsibility for implementing the surveys was contracted out to CATOR/New Standards, Inc., an independent national firm located in St. Paul, Minnesota with expertise in conducting client follow-up on alcohol and substance abuse. This firm is a clinical measurement and data management services organization specializing in behavioral health care. The firm has a focus on evaluating the effectiveness of treatment for problems in Mental Health, chemical dependency, and eating disorders.

FIRST SURVEY

Due to delays in implementing the contract with CATOR/New Standards, the initial interviews started during late December 1992. This initial interview, the discharge survey for the control group and the survey for the end of the first 90 days of outpatient treatment for experimental clients, was scheduled to take place within two weeks of the discharge date of controls. As shown in Figure 2A, some interviews took place later than the scheduled two-week period.

SECOND SURVEY

The second telephone survey, scheduled between February 1, 1993 and July 1993, was the 90 day follow-up for controls and the discharge from extended outpatient care for experimentals. The distribution of these interviews is shown in Figure 2B. While most of these interviews occurred on schedule, a few occurred more than thirty days after the scheduled date.

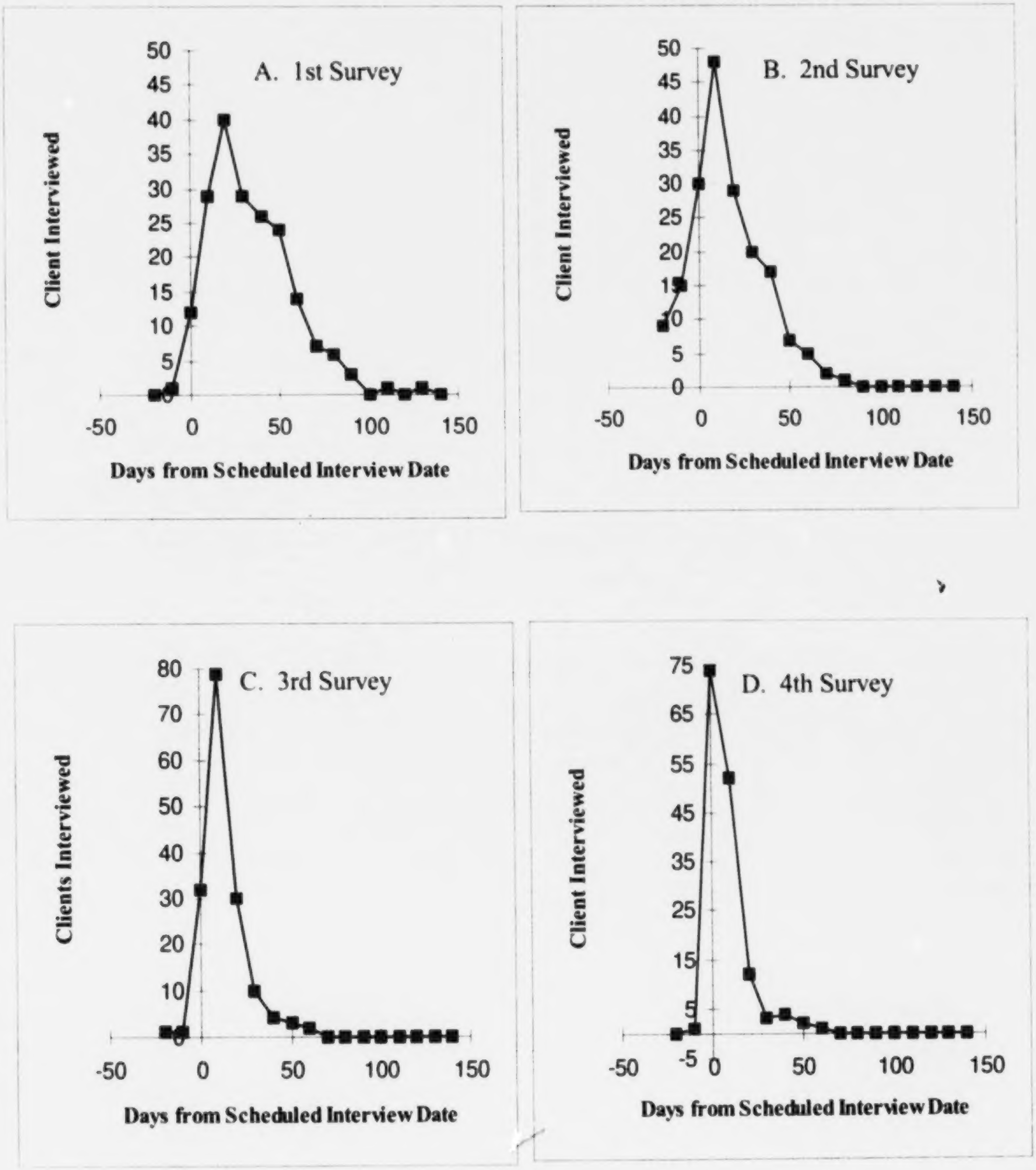
THIRD SURVEY

The third survey was scheduled for May 1, 1993 through November 1993. This was the 180 day follow-up for controls and the 90 day follow-up for experimentals (Figure 2C). The number of these interviews which occurred more than 30 days from the scheduled date was very small.

FOURTH SURVEY

The fourth survey was done between August 1, 1993 and February 1994. This was the 270-day follow-up for controls and the 180-day follow-up for experimentals (Figure 2D). The purpose of the 270-day follow-up for controls was to provide data to answer questions about potential history effects introduced by the 90 day lag resulting from the additional treatment that experimentals received. Most of these interviews occurred within the two week window desired.

Figure 2: DIFFERENCES BETWEEN THE SCHEDULED INTERVIEW AND ACTUAL SURVEY DATES FOR BOTH EXPERIMENTAL AND CONTROLS



OUTCOME INDICATORS

Nine major outcomes were identified at the beginning of the project. These were alcohol and drug use, employment, living arrangements, medical problems, psychiatric problems, legal problems, family and social relationships, treatment re-entry, and participation in 12-step programs. The questions on the follow-up questionnaire which relate to each of these areas are shown in Appendix 2A.

VALIDITY OF SELF REPORT QUESTIONNAIRE

Regarding the instrument used in this study, CATOR/New Standards conducted a study on its concurrent validity using collateral informants (Hoffman and Ninoonuevo, 1993 pre-publication draft). This study relies on the concurrent validation of the instrument as reported in that study.

DATA ANALYSIS, STATISTICAL METHODS AND COMPARISONS

PRELIMINARY ANALYSIS

Two types of analyses were conducted to establish the comparability of clients assigned to the control and experimental groups using chi-square technique:

1. Clients who did not consent to the study were compared with those who participated. This analysis found that there was no difference between these two groups. As such there was no selection bias in the consent process (see Table 3).
2. Clinical records and discharge data were used to compare the characteristics of the two groups at the time of discharge. The result of this analysis was that there was no difference between the two groups at the time of discharge.

VARIABLE REDUCTION

A large number of variables were included in the survey questionnaire at different levels of measurement. To measure the effects of treatment on the nine outcome variables of interest to this research, the data were subjected to correlational analysis for each of the surveys. As a preliminary guide, variables for which the correlation coefficient (Tau-B) between experimental and control group membership and the variable in question was significant at p = .05 or better were chosen for further analysis. This procedure facilitated the reduction in the number of variables which were used in subsequent statistical analysis.

UNSCHEDULED TREATMENT

One important concern was the potential for either the control or experimental groups to receive additional unscheduled treatment. A significant number (33) of control group members received extended treatment after the standard 90 days of outpatient care, thereby confounding the additional treatment received by the experimental group. In a statistical analysis, the effect would appear as a diminished treatment effect and could result in a finding of no significant difference between the experimental and control groups. If additional treatment was received by members of the experimental group (and not by members of the control group) the anticipated result might well be an exaggeration of the real treatment effects.

PRIMARY ANALYSIS

Significant amounts of unscheduled treatment received by either group would result in the invalidation of the experimental design. The random assignment of clients to experimental and control groups requires that the experimental condition or variable be controlled. Since some controls received additional unscheduled treatment, another more appropriate method of analysis was applied. Based on that, the following analyses were done:

1. Descriptive data comparing the experimental and control groups were produced for each of the major datasets.
2. Using a combination of correlation analyses, chi-square tests and T-tests, the data elements from the CATOR/New Standards questionnaires were reduced to significantly fewer variables. All variables that were significant at a level

0.1 or better were selected. A number of the non-significant variables were further recoded or collapsed into fewer categories of responses. For example a number of binary responses (yes/no categories) relating to the use of individual drugs were combined into one category defined as any self-reported drug use.

3. Using chi-square and T-test, the experimental and control clients were compared across each of the outcome measures at both 90-day and 180-day follow-up periods.

4. *Univariate logistic regression:* Treatment group distinction (that is, the number of days of treatment received by the control or experimental group), the amount of unscheduled treatment in days, and the total amount of treatment in days received by clients were used as independent variables. Each outcome variable was regressed against each of these independent variables separately in a univariate model. The approach showed which outcomes were related to scheduled or unscheduled treatment.

5. *Multi-variate logistic regression:* From the results of the chi-square analyses, T-tests, and univariate logistic regression, outcomes which showed a strong relationship with the treatment variables were identified. Also, other non-treatment variables (such as prior drug use, prior involvement with the criminal justice system, prior employment, or aftercare) which showed some relationship with outcomes were also identified as independent variables. The outcomes were examined further using multi-variate logistic regression, with the treatment-related variables included simultaneously along with the additional independent variables.

FINDINGS I: DIFFERENCES IN CLIENT CHARACTERISTICS: TREATMENT DROP-OUT AND FOLLOW-UP ATTRITION

4

BACKGROUND CHARACTERISTICS OF CLIENTS

This chapter discusses observed differences in the background characteristics of clients assigned to the control and experimental groups, the treatment drop-out rates, and attrition rates during the follow-up surveys.

In this report, dropouts refers to those clients who failed to complete the scheduled treatment. Completers are controls who completed the scheduled 90 days outpatient treatment, or experimentals who completed the initial 90 days of outpatient treatment, and at least 45 of the additional 90 days of extended outpatient care. Clients finishing the prescribed counselling a few days before or after the scheduled date of completion, were also counted as completers. Attrition refers to clients who could not be contacted or located for interview during the follow-up surveys conducted after discharge from treatment.

There were two critical concerns in this study: (a) the number of experimentals who would complete extended treatment, and (b) the number of experimentals or controls who can be located for the discharge and follow-up surveys. These were the determinants of the clients needed (n of cases) to enable an analysis with sufficient statistical power to detect moderate treatment effect differences between the two groups.

CLIENT CHARACTERISTICS AT ADMISSION TO OUTPATIENT TREATMENT

As clients were being assigned to the two groups during the 70th to 78th day of the initial outpatient care, clinical files were reviewed and data recorded on demographics, prior treatment and chemical abuse history. These data were recorded in client files at the time they were admitted to outpatient treatment.

The percentage distribution of experimental and control clients was comparable across all the background characteristics (Table 4).

Table 4: Background Characteristics of Clients at Admission to Outpatient Treatment

Variable			Control		Exp.		Combined	
			#	%	#	%	#	%
Demographics								
	Age	0-25	16	15.1	17	13.3	33	14.4
		26-35	47	45.2	60	46.9	107	46.5
		36+	40	39.7	50	39.8	90	39.1
	Gender	Male	81	78.6	101	79.5	182	79.1
		Female	22	21.4	26	20.5	48	20.9
	Race	White	70	68.0	88.0	69.3	158	68.7
		Black	20	19.4	29	22.8	49	21.3
		Hispanic	5	4.9	7	5.5	12	5.2
		Other	8	7.8	3	2.4	11	4.8
Marital Status		Single*	92	89.3	119	93.7	211	91.7
		Married	11	10.7	8	4.7	19	8.3
	Disabled	Yes	19	18.4	22.0	17.3	41	17.8
		No	84	81.6	105	82.7	86	82.2
Alcohol/ Drug Use		Reported Daily Drug use	54	52.4	68	53.5	122	53.0
		Reported Alcohol as Primary Drug	63	61.2	89	70.1	152	66.1
		Reported Marijuana as Primary Drug	10	9.7	5	3.9	15	6.5
		Reported Cocaine as Primary Drug	21	20.4	25	19.7	46	20.0
		Reported Heroin as Primary Drug	4	3.9	6	4.7	10	4.4
		Other	5	4.9	2	1.6	7	3.0
Employment		Unemployed	53	51.5	68	53.5	121	52.6
		Had no Job in Last 6 Mo.	73	70.9	84	66.1	157	68.3
Income		Less than $339/month	28	27.2	37	29.1	65	28.3
		$339/month	72	69.9	88	69.3	160	69.6
		More than $339/month	3	2.9	2	1.6	5	2.1
Education		< 12 years	48	46.6	55	43.3	103	44.8
		H.S. Diploma/GED	35	34.0	49.0	38.6	84	36.5
		Post H.S. Diploma/GED	20	19.4	23	18.1	43	68.7
Living Arrangements		Alone	28	27.2	35	27.6	63	27.4
		With Relatives	31	30.1	28	22.1	59.0	25.7
		Unrelated Household	30	29.1	41	32.3	71	30.9
		Homeless Shelter	4	3.9	6	4.7	10	4.4
		Unknown/Not Reported	10	9.7	17	13.3	27	11.6
Mental Problems		With Problems	15	14.5	20	15.8	35	15.0
		Without Problems	88	85.5	67	84.2	195	85.0
Medical/ Physical Prob.		With Problem	27	26.2	40	31.5	67	29.1
		Without Problem	76	73.9	87	68.5	163	70.9
Legal Problems		Court Ordered to Tx.	27	26.2	40	31.5	67	29.1
		Prior Arrest	80	77.7	106	83.5	186	80.9
		Parol/Probation	30	29.1	46	36.2	76	33.0
Family/Social		With Children	4	3.9	5	3.9	9	3.9
		Without Children	99	96.1	122	96.1	221	96.1
		1+ Dependents	91	88.3	115	90.6	206.0	89.6
		No Dependents	12	11.7	12	9.5	24	10.4

Multiple chi-square analyses were conducted to determine the differences between the experimental and control groups across the background characteristics. In all the variables analyzed, no statistically significant differences were observed between the two groups at $P \leq 0.05$ (Table 5). This is another indication that the randomization procedure was successful, and that client placement in the two groups was unbiased.

DEMOGRAPHIC CHARACTERISTICS

About 40% of the clients were aged 35 years or older, 79% male, 69% white, and about 92% were single, divorced or widowed.

ALCOHOL/ DRUG USE

About 53% of the clients reported daily drug use prior to treatment. The use of alcohol, cocaine, marijuana, and heroin as the primary drug was reported by 66.5%, 20%, 6.5%, and 4.4% of the clients respectively. Over 61% reported using the primary drug for over 15 years. Another 17% reported using it between 5 and 10 years, and another 17% between 10 and 15 years. About 55% reported having been in treatment before.

EDUCATION, EMPLOYMENT, AND INCOME

About 45% of the clients had less than 12 years of formal education, and another 36.5% completed High School diploma or GED. About 53% of clients in the study reported being unemployed at the time of admission, and 68% reported not having a job in the last six months. Only 2% reported income above the normal ADATSA stipend of $338 per month.

LIVING ARRANGEMENT

About 27% of clients lived alone, 26% lived with relatives, 31% lived in unrelated households, about 4.4% were homeless, and 11.6% lived in unknown or unreported living situations at the time they were admitted to treatment.

MEDICAL AND PSYCHIATRIC PROBLEMS

About 29.1% of the clients reported having medical or physical problems, another 15% reported mental or psychiatric problems, and 18% reported some form of disability at the time of admission.

Table 5: Comparison of Background Characteristics for Controls and Experimental Clients at Admission to Outpatient Treatment

Variable		CONTROL	EXPERIMENTAL		
		N	N	X^2 Value	P
Demographics		103	127	-0.07	0.950
Age	0-25			(T)	
	26-35				
	36+				
Mean & Standard Deviation		33.95 / 8.27	33.88/7.97		
Gender		103	127	0.027	0.869
	Male	81	101		
	Female	22	26		
Race		101	126	5.011	0.286
	White	70	88		
	Black	20	29		
	Native American	5	7		
	Other	8	1		
Marital Status		103	127	1.523	0.217
	Single/Non-Married	92	119		
	Married	11	8		
Disability Status		103	127	6.216	0.718
	Yes	19	22		
	No	85	105		
Alcohol/Drug Use-Primary Drug		103	127	3.646	0.302
	Heroin	4	6		
	Alcohol	63	90		
	Cocaine	21	24		
	Marijuana	10	5		
	Other	5	2		
Year of Primary Drug Use		103	127	3.844	0.279
	< 5 years	6	6		
	5 - 10	18	20		
	11 - 15	12	27		
	> 15	67	74		
Mean & Standard Deviation					
Primary Drug - Seriousness		103	127	2.545	0.360
	Significant Abuser	2	2		
	Chemically Dependent	101	125		
Employment - Status/Level		103	127	0.797	0.939
	Full-time	1	1		
	Part-time	1	3		
	Temporary	3	3		
	Unemployed	53	68		
	Not in Workforce	45	52		
Job last 6 months		103	127	0.990	0.323
	None	73	84		
	One	22	26		
	Two or more	8	17		
Mean & Standard Deviation		0.46/1.14	0.61/1.14		
Income		103	127	0.548	0.760
	Less than $339/month	28	37		
	$339/month	72	88		
	Over $339/month	3	2		
Mean & Standard Deviation					
Public Assistance		103	127	2.865	0.413
	ADATSA	99	119		
	AFDC	1	0		
	GAU	0	1		
	None	0	1		
	Other	7	2		
Education		103	127	0.730	0.470
	< 12 years	48	55	(T)	
	HS Diploma/GED	35	49		
	Post HS Diploma/GED	20	23		
Mean & Standard Deviation		11.53/1.89	12.07/8.03		

Table 5 Continued:

Variable	CONTROL	EXPERIMENTAL	X^2	P
	N	N		
Veterans Health Benefits	103	127	2.113	0.348
Yes	3	1.0		
No	95	117.0		
Unknown	5	9		
Private Health Benefits	103	127	3.763	0.052*
Yes	0	0		
No	98	125		
Unknown	5	2		
Living Arrangements	103	127	3.696	0.814
Alone	29	42		
With Relatives	32	28		
Unrelated Household	34	47		
Homeless Shelter	4	6		
Unknown	4	4		
Dependents	103	127	0.317	0.853
0	12	12		
One	85	108		
Two or more	6	7		
Mean & Standard Deviation				
Number of Children	103	127	1.101	0.577
0	99	122		
One	3	2		
Two or more	1	3		
Mean & Standard Deviation				
Criminal Justice Referral	103	127	0.436	0.509
Yes	66	79		
No	26	40		
Unknown	11	8		
Probation/Parole Status	103	127	0.823	0.364
Yes	30	46.0		
No	62	73		
Unknown	11	8		
Ever Arrested	103	127	0.193	0.660
Yes	80	106		
No	11	12		
Unknown	12	9		
Military History	103	127	0.133	0.715
Yes	22	26		
No	69	92		
Unknown	12	9		
Medical/Psych History	103	127	0.463	0.496
Yes	27	40		
No	67	81		
Unknown	9	6		
Current Mental Status	103	127	16.030	0.522
Depressed	6	11		
OK	33	49		
None	38	37		
Other	26	30		
Prior Alcohol/Drug Treatment	103	127	2.002	0.368
Episodes	50	53		
Yes	29	34		
No	24	40		
Mean & Standard Deviation				

*Note that 50% of Cells less than 5. X^2 may not be valid.

(T) = T-values

LEGAL PROBLEMS

One-third (33%) of the clients were on parole or probation, nearly 81% had a prior arrest record, and 29% were admitted to treatment through court-ordered referral.

FAMILY/SOCIAL RELATIONSHIPS

Whereas 96% had no children, nearly 90% had one or more dependents at the time of admission.

ANALYSIS OF BACKGROUND CHARACTERISTICS

Multiple chi-square analyses were conducted to determine the differences between the experimental and control groups across the background characteristics. No statistically significant differences were observed between the two groups at P=0.05 level across all variables in terms of frequency, except for private health benefits, to which question fewer controls than experimentals responded (Table 5). This was another indication that the randomization procedure was successful, and that client placement in the two groups was unbiased.

TREATMENT DROP-OUT AND SURVEY CONTACT RATES

Since clients were assigned to the study when both groups were nearly completing the regular (90-day) outpatient care, 97 out of 103 controls (94.2%) completed regular outpatient treatment (Table 6). There were only 6 dropouts (5.8%) from this group (Figure 3), and these clients dropped out between the time they were recruited (between 70th and 78th day) and the 90th day of outpatient treatment.

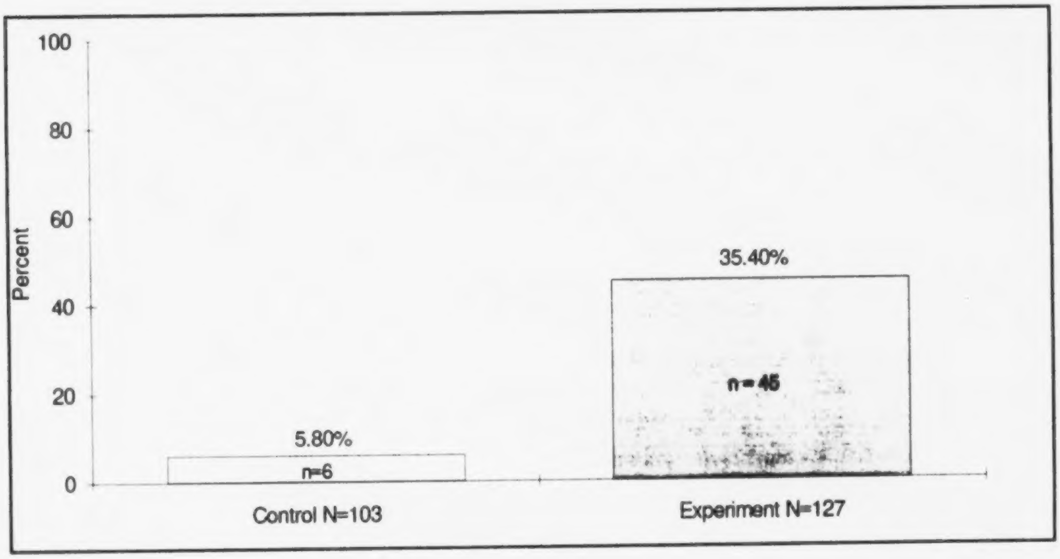
Table 6: Treatment Enrollment, Drop-Out and Discharge

	CONTROLS		EXPERIMENTALS	
	No	%	No	%
Enrolled	103	100.0	127	100.0
Treatment Dropouts	6	5.8	45	35.4
Discharged	97	94.2	82	64.6

Note: For analysis purposes any client completing at least 45 days of extended care was counted as a completer.

Of the 127 experimentals enrolled for the study, 45 (35.4%) failed to complete the additional 90 days of extended treatment. A number of these clients dropped out of treatment because of various reasons including obtaining regular or part-time employment or returning to school. About 22 of the drop-outs completed 45 days or more of the 90-day extended care. Only 23 clients (18%) dropped out before completing half of the extended outpatient treatment.

Figure 3: Drop Out Rate During Extended Outpatient Treatment



CHARACTERISTICS OF CLIENTS AT DISCHARGE FROM REGULAR (90-DAY) AND EXTENDED (180-DAY) TREATMENT

SUCCESSFUL CONTACTS

At discharge from outpatient treatment (i.e. after 90 days of outpatient care for controls and 180 days of outpatient care for experimentals), 186 clients were successfully interviewed out of the initial 230. This resulted in a combined interview rate of 81.7%, with 78.6% of controls and 82.7% of experimentals.

A comparison of the two groups showed that there were no significant differences across most of the variables analyzed (Appendix 2A). However, as shown on Table 7, a few variables showed statistically significant differences at $P \leq 0.05$ level.

Table 7: Differences in Client Characteristics at Discharge from Regular (90-Day) and Extended (180-Day) Outpatient Treatment

	Mean			Significance		Significance
Outcome Variable	**C**	**E**	**T-Value**	**Level**	**X^2**	**Level**
Alcohol/Drug Use						
Past three months, number of days from all chemicals	29.40	27.90	1.92	0.06		
Employment						
Employed outside the home			9.93	0.02		
If employed last month, how many days absent from work	1.50	2.40	3.60	0.06		
Months not worked	2.07	1.68	-1.98	0.05		
Living Arrangement						
No significant variable						
Medical Problems						
Past 3 months, how many days in hospital for illness, injury or surgey	3.30	57.90	12.50	0.05		
Psychiatric Problems						
If depressed, experienced increase in appetite					4.45	0.04
If depressed, experienced loss of enjoyment					4.73	0.03
Thoughts of suicide					4.44	0.04
Legal Problems						
No significant variable						
Family/Social Relationships						
Past 90 days have been lonely					8.27	0.01
Treatment Re-Entry						
In treatment past three months					9.16	0.03
Participation in 12-Step Program						
Attended aftercare in past 90 days					8.55	0.01
If attended aftercare how many months	1.37	1.92	-2.69	0.01		

ALCOHOL AND SUBSTANCE USE

One variable for which there was a moderate significant difference between controls and experimentals was the number of days of abstinence from all chemicals, with a mean of 29.4 days for controls and 27.9 for experimentals (T-value= 1.92; P=0.06). For all other variables on alcohol and substance abuse, there were no differences between the two groups. These variables include: the use of any drug in the past 90 days, the use of any mood altering chemicals, neglect of responsibilities because of drinking or drug use, drinking to the extent of not being able to remember the next day what they had said or done, experiencing shakes or withdrawal symptoms, or smoking.

EMPLOYMENT

A majority of the employment variables showed no significant differences between the two groups (Appendix 2A). These include months of full-time or part-time worked in the past three months, work related problems, or being under the influence of alcohol or drugs while working. There were differences between the groups in two employment variables (Table 7). Controls reported more months not worked in the last three months (2.07) than experimentals (1.68) (T-value = -1.98; P=0.05). About 42% of experimentals reported being employed either full-time or part-time by the time they completed extended outpatient treatment compared to 30% of controls at the time they completed regular outpatient treatment. Conversely, at the time when both groups completed the first 90 days of outpatient treatment, there were only about 23% of experimentals employed compared to 30% of controls. Thus, 19% of experimentals gained employment while receiving the additional 90 days of outpatient treatment.

LIVING ARRANGEMENT

There was no difference between controls and experimentals in terms of living arrangements (Appendix 2A).

MEDICAL PROBLEMS

There were no differences between the two groups in the number of hospitalizations for any reason, emergency room visits, visits to doctors' offices, or involvement in motor vehicle accidents in the past three months (Appendix 2A). With respect to the number of days spent in the hospital, days of hospitalization for illness, injury or surgery were significantly more for experimentals (57.9) than for controls (3.3) (T-value =12.5; P=0.05). However days spent in the hospital for psychiatric care, pregnancy or childbirth, or for other reasons were not significantly different between the two groups (Appendix 2A).

PSYCHIATRIC PROBLEMS

There were no differences between the groups in feeling of depression, loss of appetite, sleep problems, loss of energy or fatigue, and having trouble thinking or concentrating (Appendix 2A). The two groups however, showed differences in three respects. More controls reported an increase in appetite than experimentals (X^2 = 4.45; P=0.04), but more experimentals reported loss of enjoyment in usual activities (X^2=4.73; P=0.03), and thoughts of suicide (X^2=4.44; P=0.04) (Table 7).

LEGAL PROBLEMS

There were no significant differences between the two groups in all variables related to legal problems (Appendix 2a).

FAMILY/SOCIAL RELATIONSHIPS

There were no differences in the proportions of clients that reported being part-time or full-time students, homemakers, single parent, retired or disabled persons. About 54% of controls and 33% of experimentals reported being lonely in the preceding 90 days (X^2=8.27; P=0.01).

TREATMENT RE-ENTRY

More experimentals reported being in treatment than controls (X^2=9.16; P=0.03) (Table 7).

PARTICIPATION 12-STEP PROGRAM

In the preceding 90 days, more experimentals attended aftercare than controls (X^2=8.55; P=0.01) (Table 7). Controls attended after-care for fewer months (1.37) than experimentals (1.92) (X^2=8.55; P=0.01) (Table 7).

ATTRITION RATES DURING FOLLOW-UP INTERVIEWS

During follow-up, there were attempts to reach and interview every client in all surveys. Therefore whether or not a client dropped out of treatment, both drop-outs and completers still had an equal chance of responding to all interviews. Thus, both drop-out and attrition rates were computed based on the initial number of clients assigned to each group.

HIGHER ATTRITION RATES FOR CONTROLS

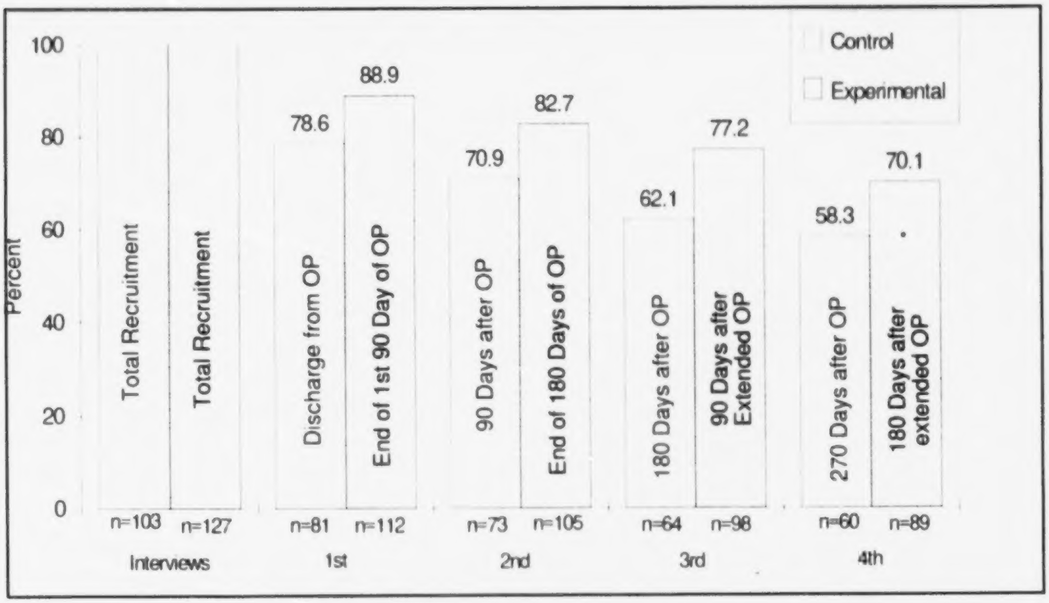
The first telephone survey for experimentals was at the end of the initial 90 days of outpatient care. In that survey, 112 (88.2%) of the 127 clients enrolled successfully completed an interview, resulting in an attrition rate of 11.8%. Of the 103 controls enrolled, 81 (78.6%) were successfully interviewed by telephone immediately after discharge from regular outpatient care, with an attrition rate of 21.4% (Table 8 and Figure 4).

It is worth noting that even though 97 controls were actually discharged from Treatment (Table 6), a smaller number (81) agreed to and successfully completed the telephone survey at discharge (Table 8). On the other hand, when experimentals were discharged from extended care, a higher percentage (82.7%) successfully completed the discharge survey than controls (78.6%).

During the second survey (i.e. at discharge from extended care for experimentals and 90-day follow-up for controls), the contact rates were 82.7% and 70.9% respectively. The corresponding attrition rates were 17.3% and 24.3% respectively.

During the third survey (i.e. the 90-day experimental follow-up and 180-day control follow-up), 98 (77.2%) experimentals were contacted along with 64 (62.1%) controls. Attrition rates were 22.8% and 37.9% respectively.

Figure 4: Contact Rate for the Four Telephone Surveys During Follow-Up



Note: The number of clients who actually completed regular (90 days) and extended (180 days) outpatient treatment is different from those who were successfully contacted for the discharge interview.

The fourth survey, the 180-day follow-up for experimentals and the 270-day follow-up interview for controls, resulted in 89 (70.1%) completed interviews for experimentals and 60 (58.3%) for controls. Attrition rates at this stage were respectively 29.9% and 41.7% (Table 8).

HISTORY EFFECTS

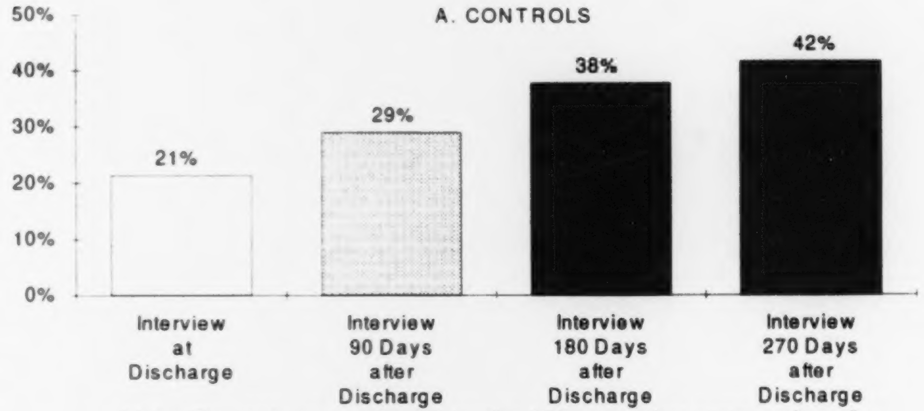
The fourth interview for the control group was meant to provide data to examine potential history effects, in order to establish that observed differences between the two groups, if any, were really due to treatment effects, and not to the time lag between corresponding follow-up surveys.

The summary of attrition rates (Figure 5A & B) shows that at the 90-day follow-up, controls had 29.1% and experimentals 22.8%. At the 180-day follow-up, controls had about 38% and experimentals about 30%. With or without history effects, controls were more difficult to reach during follow-up, and they had higher attrition rates in all surveys and in all corresponding follow-up periods.

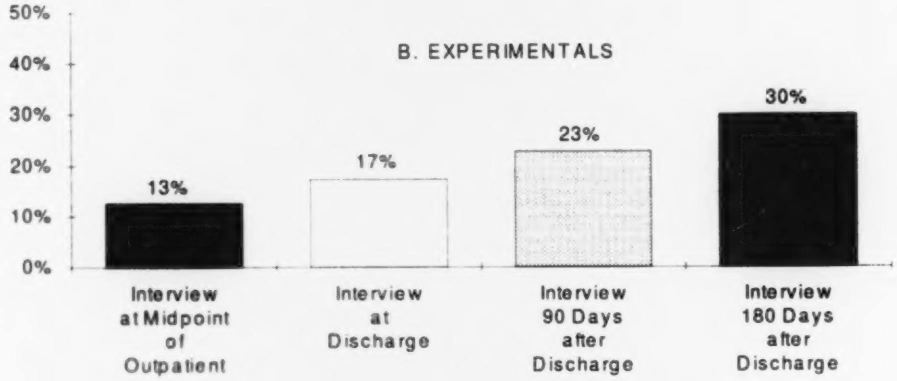
Table 8: Attrition and Contact Rates (%) During Follow-up Interviews

Survey	CONTROLS				EXPERIMENTAL			
	Attrition		Attrition		Attrition		Contact	
	N	%	N	%	N	%	N	%
First	22	(21.4)	81	(78.6)	15	(11.8)	112	(88.2)
Second	25	(24.3)	73	(70.9)	22	(17.3)	105	(82.7)
Third	39	(37.9)	64	(62.1)	29	(22.8)	98	(77.2)
Third	43	(41.7)	60	(58.3)	38	(29.9)	89	(70.1)

Figure 5A & B: Attrition Rates During Follow-Up Interviews



Note: Percentages are based on the 103 cases that were assigned.



Note: Percentages are based on the 127 cases assigned.

FINDINGS II: DIFFERENCES IN TREATMENT OUTCOME AT 90 AND 180 DAYS AFTER TREATMENT

5

GROUP COMPARISONS

The study was designed to compare two groups of clients: those receiving regular (90 days) of outpatient care and those receiving extended (180 days) of outpatient care. The intent was to compare the two groups with respect to nine categories of outcomes (see Chapter 1) at three and six months following discharge. At three months after discharge, a total of 171 clients were interviewed, with 73 controls and 98 experimentals. At the six months follow-up, a total of 153 clients were interviewed, with 64 controls and 89 experimentals.

The study was planned with the group comparison design on the assumption that each of the two groups would receive only the stipulated duration of care during the treatment period, and also that neither group would receive additional treatment after discharge from outpatient care, throughout the six months follow-up period. Based on these assumptions, the original analysis was designed to compare main effects for the two groups using Chi-square and T-test across the nine outcome areas (see Chapter 1).

ANALYSIS OF GROUP COMPARISONS

Differences in treatment outcome between the experimental and control groups were analyzed by comparing outcomes using Chi-square and T-test for both the 90 days and 180 days follow-up data. The results of these analyses are shown in Appendix 2A. There were a few variables which showed some significant differences between controls and experimentals. Of the few differences observed, only in few cases were there consistent patterns at both 90 days and 180 days follow-up (see Appendix 2A). Overwhelmingly there were no differences between the two groups in most of the variables for the nine major outcome areas compared.

DURATION OF TREATMENT

The intent of the group assignment was to ensure that both the control and experimental groups received only the designated outpatient days of treatment, with the further expectation that neither group would receive additional treatment during the

52

six months follow-up period. However, there was no means of ensuring the latter expectation as clients came back to treatment agencies to exercise their right to receive treatment, and they were treated further. An examination of the TARGET data base revealed that both controls and experimentals received additional treatment during the 90 and 180 days following discharge.

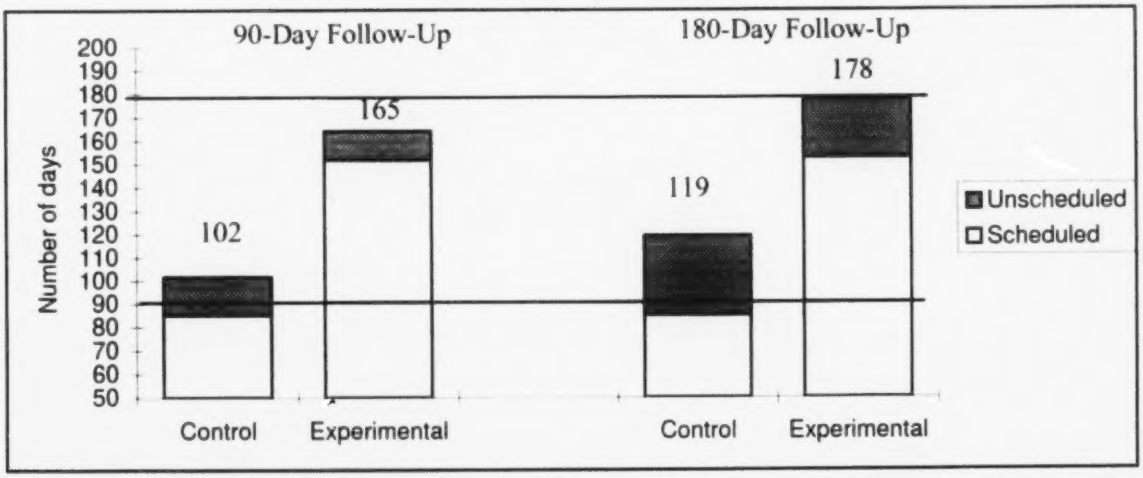
SUMMARY

CONFOUNDED EXPERIMENTAL DESIGN

During the first 90 days following discharge, 28 controls and 24 experimentals received additional (unscheduled) treatment, with corresponding averages of 16.6 days and 12.5 days respectively. Thus the averages of the total numbers of days of outpatient care the two groups received during both the scheduled treatment and the 90 days follow-up periods were 101.7 for controls and 164.7 for experimentals (see Figure 6). Thus, whereas a difference of 90 treatment days was anticipated between controls and experimentals (i.e., only 90 days for controls and 180 days for experimentals) the true difference in treatment days by the time of the 90-day follow-up interview was 63 days.

During the entire 180 days following discharge, 36 controls received additional treatment with an average of 34.2 days, whereas 23 experimentals received additional treatment with

Figure 6: Total Outpatient Treatment Days



an average of 24.9 days. This resulted in average treatment days for both the scheduled outpatient treatment and the 180 days follow-up periods of 119.3 for controls and 177.6 for experimentals (see Figure 6). Thus by the time of the 180-day interview, instead of a difference of 90 days of treatment between the two groups, the difference was only 59 days (Figure 6).

ORIGINAL COMPARISON

Although the original intent was to compare outcomes for 90 days of outpatient versus 180 days of outpatient care at both 90 and 180 days after treatment, in actuality, the study ended up with groups receiving 102 and 165 days of treatment by the 90 days follow-up comparison, and 119 and 178 days of treatment by the 180 days follow-up. So that instead of a comparison of outcomes based on a difference of 90 days of extended treatment, the real differences were 63 days at the 90 days follow-up and 59 days at the 180 days follow-up. Naturally, the study was confounded both by the amount of treatment clients received, and the sequence in which they received it. For instance, with respect to the latter, clients received treatment at the time of follow-up when neither group was expected to receive any treatment.

DAYS OF TREATMENT

Since controls received on average more than 90 days of treatment, and since both groups received additional treatment outside of the prescribed care, the study basically became a duration study. Thus, rather than comparing outcomes for controls and experimentals, outcomes are analyzed as they were influenced by duration of outpatient treatment.

ANALYSIS BASED ON DURATION OF TREATMENT

As an analysis based on duration of treatment, it becomes necessary to include additional variables as independent predictors of the influence of treatment duration on outcome, while retaining the original group designations as a unique independent variable. Therefore three additional variables were defined and included as primary predictors of outcome. These are:

1. The number of scheduled days of outpatient treatment a client received. This was the actual number of days a client was in the scheduled outpatient treatment. For controls, this varied from less than 90 days for drop outs to 90 days for completers, with an average of 85.1. For experimentals, this varied from less than 180 days for drop outs to 180 days for completers, with an average of 151.7.

2. The number of days of unscheduled outpatient treatment received during the 90 or 180 days follow-up periods.

3. The total number of days of outpatient treatment received by the client, basically the sum of the scheduled and unscheduled days of outpatient treatment.

LENGTH OF TREATMENT

Thus, in analyzing the data as a duration study, outcomes for both the 90 and 180 days post discharge surveys were analyzed against the scheduled treatment days, the unscheduled treatment days, and the total treatment days received by both experimentals and controls.

The independent variable throughout this study has been the length of outpatient treatment received by clients, in terms of the two groups to which they were assigned for treatment. The original design and analysis were based on group membership as the independent variable. Since it has already been confounded by the unscheduled treatment clients received, the analysis is modified to include the entire length of treatment clients received as the independent variable.

The modified analysis included the actual treatment time of the client for the entire duration of the study as recorded in the TARGET data system. However, this information was not available from TARGET for 13 clients. As a result, treatment days for these 13 clients were obtained from their clinical records.

There are differences between the experimental and control groups in terms of the number of days of scheduled treatment each group received. Because of drop outs from treatment, and probably other unmeasured factors, the average treatment times for the two groups (85.1 and 151.7) were less than the scheduled

90 and 180 days respectively. However, the differences in average amount of scheduled treatment between the two groups were 66.6 days at the 90-day follow-up and 67.6 days at the 180-day follow-up. The summary information on Table 9 shows that the differences in the amounts of unscheduled treatment both groups received during 90-day or 180-day follow-up periods were not statistically significant. So, unscheduled treatment could not have contributed significantly to differences in outcomes between the experimental and control groups.

Table 9: T-Test of Treatment Days for Experimental and Control Groups

	Experimental	Control	T =	P =
90 Day Follow-Up				
Scheduled	151.7	85.1	-18.7	0.0001
Unscheduled	12.5	16.6	0.89	0.3753
Total	164.2	101.7	-10.1	0.0001
180 Day Follow-Up				
Scheduled	152.7	85.1	-18.0	0.0001
Unscheduled	24.9	34.2	1.01	0.3168
Total	177.6	119.3	-5.58	0.0001

UNIVARIATE LOGISTIC REGRESSION

OUTCOME AND PREDICTOR VARIABLES

Using group distinction, scheduled treatment, unscheduled treatment, and total treatment as predictors of outcome individually, significant differences in Chi-square values were observed in some outcomes (see Appendix 2A for a complete list of outcome variables used in the analysis). A particular outcome variable was included in the logistic regression analysis if its values differed significantly between the treatment groups in the Chi-square, T-test, or the univariate logistic regression. Variables from information collected from the clinical records, such as primary drug used prior to admission, cannot be considered as outcome variables, since their occurrence was prior to the experiment and are independent of treatment effects. Unless otherwise specified, outcome measures refer to incidence in the past 90 days for both the 90 days and 180 days follow-up surveys. The meaningful outcome variables used in the analysis are defined on Table 10.

INDEPENDENT VARIABLES

Three categories of predictors were studied. These were treatment conditions, pre-treatment variables, and post-treatment factors (Table 11). The independent variables related to treatment are the four primary predictors describing the type of treatment clients received. These are group distinction, and scheduled, unscheduled, and total days of outpatient treatment.

The important pre-treatment variables observed in all the pre-analysis were the primary, secondary, and tertiary drugs the client used prior to entry to treatment, duration of alcohol/drug use, prior treatment, prior employment, prior criminal justice involvement, and criminal justice referral. The important post-treatment variables were the number of days the client was free from all chemicals, aftercare attendance during the past 90 days, and the number of months of aftercare. These fifteen independent variables and their measurement are shown on Table 11. Not all of them were necessarily present in each final model, since some variables proved to be insignificant predictors of outcome. Demographic variables were not included as predictors since the two groups did not differ in terms of those characteristics.

Table 10: Definition and Measurement of Outcomes

Outcome Category	**Significant Variable**	**Designation**	**Measurement**
Alcohol/Substance Abuse	Cocaine/Crack Use	Cocaine Use	Yes/No (0, 1)
Treatment Re-Entry	Was Additional Treatment Received?	Add Tx.	Categorical
	Type of Additional Treatment Received	Add Tx. Type	Categorical
Aftercare	Did Client Attend Aftercare?	Attended AC	Yes/No (0, 1)
	Days Client Attended Aftercare	Days AC	Continuous
	How Often Client Attended Al. Anon.	Freq AA	Categorical
Employment	Any Employment	Employed	Yes/No (0, 1)
	Duration of Employment (months)	Months Emp.	Continuous
	Did Client Have a Problem with Boss?	BossProb	Yes/No (0, 1)
	Did Client Miss any Work?	Missed Work	Yes/No (0, 1)
Medical/Physical Problems	Number of Visits to a Doctor's Office	Dr. Visits	Continuous
	Number of Visits to Emergency Room	ER Visits	Continuous
Legal Problems	Number of Arrests	Arrests	Continuous
Living Arrangement	Client's Living Arrangement	LivArr.	Categorical

Table 11: Independent Variables

Independent Variable	Designation	Measurement
Treatment Conditions		
1. Group (Experimental or Control)	G	Yes/No (0, 1)
2. Days of Scheduled Treatment	S	Continuous
3. Days of Unscheduled Treatment	U	Continuous
4. Total # of Days of Treatment	T	Continuous
Pre-Treatment Variables		
5. Primary Drug on Entry into Treatment	PD	Categorical
6. Secondary Drug on Entry into Treatment	SD	Categorical
7. Tertiary Drug on Entry into Treatment	TD	Categorical
8. Employed Prior to Treatment	PrEmp	Categorical
9. Criminal Justice Referral	CJRef	Categorical
10. Prior Treatment	PrTx	Categorical
11. Duration of Alcohol/Drug Use	DurUse	Continuous
12. Ever Involved with Criminal Justice System	CJIe	Categorical
Post-Treatment Factors		
13. Did Client have Aftercare in Past 90 Days?	AC	Yes/No (0, 1)
14. How Many Months of Aftercare?	MoAC	Continuous
15. Days Free from All Chemicals	DFC	Continuous

FINDINGS

DIFFERENCES IN OUTCOME AT 90-DAYS FOLLOW-UP USING UNIVARIATE LOGISTIC REGRESSION

In addition to the chi-square analyses and T-tests, univariate logistic regression was used to test whether treatment significantly influenced client outcomes at 90 days. In this analysis, group membership served as a proxy for additional treatment and as the independent predictor for each model. In addition scheduled treatment, unscheduled treatment and total treatment were also used as independent predictors. The significant outcomes as measured by the Wald X^2 statistic, are listed on Table 12. The results are similar to those from the chi-square analyses.

ALCOHOL/DRUG USE

The experimental and control groups did not differ significantly in terms of drug use during the follow-up period, the types of drugs used, duration of abstinence, or any other drug use behavior. However, both the primary drug used at admission (X^2=4.36; P=0.04) and the tertiary drug used at admission (X^2=5.12; P=0.02) were significantly related to group membership (Table 12).

EMPLOYMENT

The univariate logistic regression analysis (Table 12) confirmed the previous findings that experimentals were significantly less likely than controls to experience problems with a boss (X^2=5.03; P=0.02), indicating that additional treatment reduces that likelihood.

LIVING ARRANGEMENT

Differences in living arrangement were not related to duration of outpatient treatment.

MEDICAL PROBLEMS

Length of outpatient treatment was not significantly related to number of hospitalizations, emergency room visits, days hospitalized, or involvement in motor vehicle accidents. However, doctor's visits for illness, injury or surgery, and for other reasons were both related to length of treatment.

PSYCHIATRIC PROBLEMS

The symptoms of psychiatric problems reported by clients were not significantly related to duration of outpatient treatment.

Table 12: Differences Between Control and Experimental at 90-Day Follow-up using Univariate Logistic Regression

Outcome Variables	90-Day		Direction
	Wald X^2	Significance	
Alcohol/Drug Use			
Primary Drug at Admission	4.36	0.04	
Tertiary Drug at admission	5.12	0.02	(see Table 5)
Employment			
Past 90 days, problem with supervisor or boss	5.03	0.02	Controls more than experimentals
Medical Problems			
Past 3 mo. Doctor visits for illness, injury or surgery	4.90	0.03	Experimentals more than controls
Past 3 mo. Doctor visits for other reasons	4.29	0.04	Controls more than experimentals
Treatment Re-Entry			
Been in treatment past 90 days	5.04	0.02	Controls more than experimentals
Type of treatment past 90 days	4.9	0.03	Controls more than
Participation in 12-step program			
Past 90 Days, how often attended AA	4.06	0.04	Experimentals more than controls

LEGAL PROBLEMS

Treatment duration was not significantly related to the legal problems encountered by controls and experimentals during the first 90 days follow-up.

FAMILY/SOCIAL RELATIONSHIPS

Changes in family and social relationships during the 90-day follow-up period were not related to length of outpatient treatment received by clients. In the previous analysis, more controls described themselves as homemakers (see Appendix). But that finding is not significant at the univariate logistic regression analysis.

TREATMENT RE-ENTRY

The rate that both controls and experimentals re-entered treatment and the type of treatment they re-entered during the first 90 days of follow-up were both confirmed by the logistic regression to be related to length of treatment. Controls were much more likely than experimentals to have been in treatment ($X^2 = 5.04$; P=0.02), but experimentals were much more likely to re-enter inpatient treatment ($X^2=4.90$; P=0.03) (Table 12).

PARTICIPATION IN 12-STEP PROGRAM

The finding that experimentals were more likely to attend AA meetings was also confirmed by the logistic regression ($X^2 = 4.06$; P=0.04). Other variables such as attending aftercare were not significant.

DIFFERENCES IN TREATMENT OUTCOME AT 180 DAYS USING UNIVARIATE LOGISTIC REGRESSION

In addition to chi-square analysis and T-tests, univariate logistic regression was used to test whether additional treatment influenced client outcomes at 180 days. Group membership also served as a proxy for additional treatment and as the independent predictor for each model. In addition, scheduled, unscheduled and total treatment were used as independent predictors. The significant outcomes as measured by the Wald X^2 statistic, are listed on Table 13. The results are similar to those of the chi-square analysis and T-tests for the 90-day data (Table 12).

From the univariate logistic regression analysis, none of the outcome variables for alcohol and substance use during the 180-day follow-up period showed any significant relationship with duration of outpatient care.

Similarly, outcomes relating to living arrangement, medical and psychiatric problems, treatment re-entry, and participation in 12-step program showed no relationship with length of outpatient treatment.

EMPLOYMENT

The univariate logistic regression analysis of the 180-day data confirmed the findings of the 90-day follow-up that experimentals were significantly less likely than controls to experience a problem with a supervisor or boss (Wald $X^2 = 4.74$; P=0.03). Thus, this relationship holds for both the first three months follow-up as well as for the second three months after discharge.

LEGAL PROBLEMS

At the 180-day follow-up, the univariate logistic regression results confirmed that controls were more likely than experimentals to have been in jail overnight during the follow-up period (Wald $X^2 = 4.43$; P=0.04).

Table 13: Differences in Control and Experimental at 180-day Follow-up using Univariate Logistic Regression

Outcome Variables	180-Day		
	Wald X^2	Significance	Directions
Alcohol/Drug Use No significant variable			
Employment Past 90 days, problem with supervisor or boss	4.74	0.03	Controls more than experimentals
Medical Problems No significant variable			
Legal Problems Past 90 days, have you been in jail overnight	4.43	0.04	Controls more than experimentals
Family/Social Support Are you described as a Homemaker	5.23	0.02	Controls more than experimentals
Treatment Re-Entry No significant variable			
Participation in 12-Step Program No significant variable			

FAMILY/SOCIAL RELATIONSHIPS

The finding that more controls were homemakers was also significant using the univariate regression at 180-days follow-up (Wald X^2 = 5.23; P=0.02).

SUMMARY

EFFECT OF DURATION ON TREATMENT

The table on Appendix 2A presents a summary of the effects of treatment duration on outcome in terms of differences between control and experimental clients for all outcome variables, regardless of whether or not they were significant, and in spite of all the implementation problems that confounded the original experimental design. Further, the results of the univariate logistic regression (Tables 12 and 13) and the multivariate analysis (Appendix Tables 5-1 to 5-19) are also presented showing the nine categories of outcomes as they were influenced by treatment group and the less restrictive measures of treatment duration: the scheduled, unscheduled, and total days of treatment.

The major finding of this study is that a few variables are found to be related to the duration of outpatient treatment. Further, the few significant variables present an inconsistent relationship to outcome. In most cases, there is no consistent trend at the 90 and 180 days post treatment follow-ups. We learned though that there is a difference in additional outpatient treatment, but the two selected groups did not reflect the desired 90 and 180 days benchmarks so as to clearly show when the effects change.

Following is a summary of the nine outcome areas and a discussion of the few cases where the duration of outpatient treatment, specifically longer outpatient treatment, made a difference in client outcomes.

ALCOHOL AND SUBSTANCE ABUSE

In terms of the numbers of clients who were using alcohol or drugs either at three months or six months after treatment. There was no difference between clients who received the regular 90 days outpatient treatment and those who received the extended (additional 90 days) outpatient treatment. It seems however, that clients who received extended outpatient treatment appeared to use less cocaine during the first 90 days follow-up and less painkillers during the 180 days follow-up than those who received the regular outpatient treatment.

EMPLOYMENT

Although additional outpatient treatment had no effect on increasing the number of clients getting employed, those employed who received longer treatment had less problems with their boss both at the three months and six months follow-ups. Clients who received longer treatment missed work more often during the first three months of follow-up than those who received the regular duration of outpatient treatment. However, at the six months follow-up, those who received additional treatment worked full-time for more months than those who received regular outpatient treatment.

LIVING ARRANGEMENT

During the six months follow-up, more of the clients who received additional treatment lived with their spouse than those who received the regular outpatient treatment. However, treatment duration did not have a major effect on improving the living arrangement of clients during the first three months after discharge.

MEDICAL PROBLEMS

Although duration of outpatient treatment did not affect the number of clients having medical problems, the number of times clients were hospitalized, and the total number of days clients spent at the hospital, during the first three months follow-up: (1) more of the clients who received longer outpatient treatment visited the doctor's office for illness, injury or surgery than those who received regular outpatient treatment; and (2) more of the clients who received regular outpatient treatment visited the doctor's office for other reasons than those who received longer treatment. During the six months follow-up, clients who received longer treatment made fewer visits to the doctor's office for illness, injury or surgery than those who received shorter outpatient treatment.

PSYCHIATRIC PROBLEMS

There was no difference between clients who received longer outpatient treatment and those who received shorter outpatient treatment in terms of the number of clients reporting psychiatric problems at both three or six months follow-ups.

LEGAL PROBLEMS

Duration of treatment had no effect on the number of clients arrested or the number of arrests for DWI; speeding or moving violation; disorderly conduct; assault or battery; theft, robbery or burglary; vandalism or destruction of property; possession of drugs or drug paraphernalia; or sale of drugs. Of the few clients who were arrested for reasons other than those listed above, more of those who received shorter outpatient treatment were arrested than those who received longer treatment. At the six months follow-up, more of the clients who received less treatment reported being in jail for at least overnight than those who received longer treatment.

FAMILY/SOCIAL RELATIONSHIPS

In both the three months and six months follow-ups, treatment duration did not appear to have any influence on changes in the marital status or other social relationships of clients, except that more of those who received less treatment described themselves as home-maker at both the three months and six months interviews than those who received longer treatment.

TREATMENT RE-ENTRY

The duration of outpatient treatment was related to clients' subsequent re-entry into treatment and the type of treatment they re-entered. More of the clients who received shorter outpatient treatment came back into treatment during the six months follow-up period than those who received longer outpatient treatment. All clients who came back into treatment during the follow-up period after receiving the regular outpatient treatment, entered outpatient treatment. On the other hand, some clients who came back to treatment after receiving longer outpatient treatment, entered inpatient treatment.

PARTICIPATION IN 12-STEP PROGRAM

Treatment duration was related to aftercare attendance and the number of days of aftercare at both three and six months follow-up periods. Clients who received longer outpatient treatment attended AA meetings more often than those who received shorter outpatient treatment.

POSSIBLE REASONS FOR THE FEW SIGNIFICANT FINDINGS

Some possible explanations for the few significant differences between clients who received longer outpatient treatment and those who received the regular outpatient treatment are as follows:

1. Even though the study was designed to recruit clients into two distinct groups corresponding to the regular (90 days) and extended (180 days) outpatient treatment, after they were discharged from treatment, there was no means to ensure that clients did not return to treatment during the follow-up period.

2. The follow-up period was probably too short to have made a highly significant impact on some outcomes. For instance, with respect to employment, since many clients in both groups were in treatment for much of the follow-up period, only a few clients actually obtained employment in either group during the six months follow-up. So even controlling for treatment duration or group distinction, the numbers of these clients were too small to make any difference in the statistical analysis. Over a longer follow-up period perhaps up to a year, there might be some differences in the number of clients getting employed as more clients in both groups might have had more opportunity to look for and obtain employment.

3. With respect to most of the other outcome variables, the treatment re-entry of clients simply washed off any potential differences which might have existed between clients who received the regular outpatient treatment and those who received the extended outpatient treatment.

6

CONCLUSION

SYNOPSIS OF THE STUDY

This study was designed to compare outcomes for two groups of alcohol and substance abuse clients: a control group assigned to regular 90 days of outpatient treatment, and an experimental group assigned to 180 days of extended outpatient care. Outcomes were compared in the following nine different categories.

1. Relapse, measured as reported alcohol or drug use subsequent to treatment.
2. Post-treatment employment.
3. Living arrangements.
4. Medical and physical problems.
5. Psychiatric problems.
6. Legal or criminal justice system problems.
7. Family and social relationships.
8. Treatment re-entry.
9. Participation in 12-step or other support programs.

The major focus of the study was to determine if the additional 90 days of outpatient treatment impacted post-treatment outcome.

METHOD

Information from three client self-report surveys provided the key source of data analyzed in the study. These interviews were conducted at (1) discharge, (2) 90 days after discharge, and (3) 180 days after discharge. To account for possible history effects due to the 90-day lag between the two groups in their discharge and follow-up interviews, two additional supplementary interviews were conducted. The experimental group was interviewed at the mid-point of the 180-day outpatient treatment, and the control group was interviewed at 270 days after discharge. Other supplemental data were obtained from clinical records and from DASA's TARGET information system.

Three levels of analysis were conducted using data from the telephone interviews. The first level of analysis was a comparison of the two groups using chi-square and T-test. The second level of analysis was a logistic regression analysis using a single dependent variable or outcome against the independent variable, represented by group membership (experimental or control), number of days of scheduled treatment, number of days of unscheduled treatment, or number of days of total treatment.

The third level of analysis was multivariate logistic regression using the outcome variables regressed against a number of predictor variables. The predictors included different measures of the primary independent variable, duration of treatment, as well as other secondary predictors such as pre-treatment characteristics and post-treatment experiences.

FINDINGS

From the analysis of data from clinical records, there were no observed differences between clients who participated in the study and those who refused to participate, indicating that there was no consent bias. Also, there were no differences between the control and experimental groups in background demographic and prior drug use characteristics at the time of admission to treatment. This would indicate that differences between the two groups in treatment drop-out rates, follow-up attrition, and outcomes were not related to these pre-treatment conditions.

The findings of the study are divided in three major sections as follows:

1. Differences between control and experimental clients in treatment drop out rates and follow-up attrition.
2. Differences in the characteristics of clients at 90- and 180-day follow-ups based on frequency distributions.
3. Differences between control and experimental groups in client outcomes at 90 and 180-days after discharge.

DROP OUT RATES AND FOLLOW-UP ATTRITION

There was a 5.6% drop out rate from regular (90-days) outpatient treatment for controls. Experimentals had a 35.4% drop out rate from the extended (180-days) outpatient treatment.

After both groups completed treatment, there were consistently lower contact rates for controls than for experimentals at the discharge, 90-day, and 180-day follow-up surveys. At discharge, 78.6% of controls were contacted compared to 82.7% experimentals. At 90 days after discharge, 70.9% controls were contacted compared to 77.2% experimentals. At the 180-day follow-up, 62.1% controls were contacted compared to 70.1% experimentals. Extended treatment thus seems to have a positive effect on contact rate.

DIFFERENCES IN CLIENT CHARACTERISTICS AT 90 AND 180 DAY FOLLOW-UPS

At the time of recruitment to outpatient treatment, the control and experimental groups showed no difference in client characteristics (Tables 4 & 5). At the 90-day follow-up, the only statistically significant difference in client characteristics was treatment re-entry. More controls than experiementals reported re-entering treatment during the first 90 days following discharge (Table 14). This might be an indication of need for additional treatment by controls even after 90 days of regular outpatient care. There were no other differences in client characteristics at the 90-day follow-up.

At the 180-day follow-up, there were no differences in client characteristics between the two groups.

DIFFERENCES IN OUTCOMES

The findings of the study in terms of treatment outcomes are divided into three for both the 90-day and 180-day follow-up periods. These are:

1. The findings from the chi-square analyses and T-tests.
2. The findings from the univariate logistic regression analyses.
3. The findings from the multivariate logistic regression analyses.

90-DAY FOLLOW-UP

CHI-SQUARE ANALYSES AND T-TESTS

At the 90-day follow-up, the following findings were made from the chi-square analyses and T-tests (Appendix 2A).

1. More control clients used cocaine during the 90-day follow-up period than experimentals.
2. There was no difference between controls and experimentals in the numbers of clients employed. However, of those

Table 14: Summary of Differences in Client Characteristics During the Follow-up Periods

Outcome Variables	90-Day				180- Day			
	Control (N = 73)		Experimental (N = 98)		Control (N = 64)		Experimental (N = 87)	
	#	%	#	%	#	%	#	%
Relapse								
Use of any drug/alcohol, past 90 days	12	16.0	20	21.0	12	18.8	19	22.1
Longest period of abstinence past 90 days (average number of days)	67	93.1	88	91.7	55	90.2	78	89.7
Employment								
Employed Full time	23	31.5	39	39.8	27	17.9	33	21.9
Employed Part time	16	21.9	18	18.4	16	25.8	17	19.6
Not Employed	34	46.5	41	41.8	35	38.5	44	50.6
Living Arrangements								
Alone	18	24.7	33	33.7	14	22.2	22	25..3
With Parents	15	20.6	17	17.4	13	20.6	19	21.8
With Spouse	0.0	0.0	2.0	2.7	0	0.0	7	8.1
With Children	4.0	6.9	5.0	5.5	7	11.1	7	8.1
With Roommates	11	15.1	12	12.2	15	23.8	11	12.6
Have No Home	0	10.0	1	1.0	0	0.0	0	0.0
Other	24	32.9	28	28.6	16	25.4	28	32.2
Medical/Physical Problems								
Hospitalized in past 90 days	4	5.5	11	11.2	3	4.8	6	6.8
Days In Hospital	2	2.7	10	10.2	1	1.6	3	3.5
Visited an Emergency Room	10	14.1	21	21.6	8	12.5	18	20.7
Visited a doctor for medical or psychiatric care	16	21.9	30	30.6	16	25.0	26	29.9
Visited a doctor for other reasons	8	11.0	3	3.1	4	6.3	1	1.2
Psychiatric Problem								
Felt Depressed Past Two Weeks	22	30.1	30	31.3	18	28.6	27	31.0
Legal Problem								
Arrested for any Reason	10	15.6	9	9.9	7	12.7	9	11.1
Spent Night in Jail	3	4.1	4	4.1	4	6.1	4	4.2
Family/Social Relationships								
Marital Status Changed past 90 days	3	4.1	1	1.0	2	3.2	4	4.8
Treatment Re-entry								
Been in Treatment, Past 90 days	20	27.4*	13	13.4*	8	12.7	13	15.1
Attended Aftercare, Past 90 days	25	34.3	37	38.5	18	28.6	32	36.8
Participation in 12-step Program								
Attended AA in past 90 days	66	90.4	82	83.7	52	81.3	70	80.5
Any other support group, past 90 days	24	32.9	23	24.0	18	28.1	26	29.9

---

*Statistically significant difference at probability level ≤ 0.05.

employed, more controls had problems with their boss than experimentals. Also only experimentals missed work.

3. Controls were more likely to visit a doctor's office for other reasons, whereas experimentals were more likely to visit a doctor's office for illness, injury or surgery.
4. More controls reported being arrested than experimentals.
5. More controls reported being home makers than experimentals.
6. Controls were more likely to come back to outpatient treatment than experimentals.
7. More experimentals participated in a 12-Step Program.

UNIVARIATE LOGISTIC REGRESSION

The findings from the univariate regression analyses of the 90-day follow-up data (Table 12), showed that outcomes for controls and experimentals differed in the following ways:

1. The outcomes of living arrangement, psychiatric problems, legal problems, and family/social support were not related to length of outpatient treatment.
2. Primary and tertiary drugs were significantly related to treatment duration.
3. Having problems with the boss was significantly related to group membership. This confirms the same findings in the chi-square and T-tests.
4. Experimentals were more likely than controls to visit a doctor's office for illness, injury or surgery. However, they were less likely than controls to visit a doctor's office for other miscellaneous reasons.
5. Controls were more likely to enter outpatient treatment during the follow-up period than experimentals. Experimentals were more likely to enter inpatient treatment or to attend AA meetings than controls.
6. More experimentals attended AA more often.

MULTIVARIATE LOGISTIC REGRESSION

The multivariate logistic regressions of the 90-day data showed that group membership or scheduled treatment was important only in the prediction of a few outcomes from the data. These were:

1. Cocaine or crack relapse was significantly influenced by prior use of cocaine as a primary drug and months of abstinence from all chemicals during the follow-up period (Appendix Table 5-1). Thus the longer a client abstains from use, the less likelihood that his drug of relapse will be cocaine or crack.
2. Employment outside the home was positively related to marijuana use and negatively related to aftercare attendance (Appendix Table 5-2).
3. Having problems with a supervisor was positively related to the pre-treatment use of cocaine as a primary drug (Appendix Table 5-3).
4. Doctor's visit was positively related to the duration of outpatient treatment (Appendix Table 5-4).
5. Emergency room visit was related to days of scheduled outpatient treatment and prior use of cocaine as a primary drug (Appendix 5-5).
6. Clients were more likely to live with parents or roommates than to have some other living arrangement (Appendix Table 5-6). The stability of the living arrangement was inversely related to aftercare attendance.
7. Treatment re-entry was related to group membership and days of unscheduled (additional) treatment (Appendix Table 5-7). Being in the experimental group (that is, receiving an additional 90-days of outpatient treatment) decreased the likelihood that clients will re-enter treatment.
8. Clients were much more likely to re-enter outpatient treatment than inpatient (Appendix Table 5-8). Clients whose pre-treatment primary drug was marijuana, and those who had longer unscheduled (additional) treatment, had decreasing odds of re-entering treatment.
9. Group membership and duration of abstinence during the follow-up period were the important predictors of the frequency of AA attendance (Appendix Table 5-9).

10 Unscheduled (additional) treatment clients received during the follow-up period was the only significant predictor of both aftercare attendance (Appendix Table 5-10) and duration of attendance (Appendix Table 5-11).

FINDINGS AT 180-DAY FOLLOW-UP

CHI-SQUARE AND T-TEST

At the 180-day follow-up, the findings from the chi-square analyses and T-tests (Appendix 2A) showed that differences between controls and experimentals were significant for only a few outcomes. The summary of these relationships is as follows:

1. There were no differences between the two groups in terms of psychiatric problems, treatment re-entry, or participation in a 12-step program.
2. Some controls reported using pain killers while no experimental clients reported using any.
3. Experimentals worked for more months either full-time or part-time than controls.
4. More controls had problems with their boss than experimentals.
5. More experimentals lived with their spouse than controls
6. Fewer experimentals visited the doctor's office for illness, injury or surgery than controls.
7. More controls reported being in jail at least overnight than experimentals.
8. More controls reported being homemakers than experimentals.

UNIVARIATE LOGISTIC REGRESSION

The results of the univariate logistic regression analysis of the 180-day follow-up (Table 13) showed that controls and experimentals did not differ with respect to many of the outcomes. The two groups differed only in three outcomes as shown below:

1. There were no differences between the two groups in terms of alcohol and drug use, living arrangement, medical problems, psychiatric problems, treatment re-entry, and participation in a 12-step program.
2. Experimental clients were less likely than controls to have problems with their supervisor.
3. Controls were more likely than experimentals to have been in jail.
4. Controls were more likely to be homemakers during the follow-up period than experimentals.

MULTIVARIATE LOGISTIC REGRESSION

Basically, results of the multivariate logistic regression analysis of the 180-day data confirmed the findings from the 90-day analysis. The following results were observed:

1. The use of cocaine as a primary drug prior to treatment and duration of abstinence after discharge from outpatient treatment were the significant predictors of relapse on crack or cocaine (Appendix Table 5-12).
2. Group membership and the prior use of marijuana as a primary drug were the significant predictors of having problems with a boss (Appendix Table 5-13). Being in the experimental group reduces the likelihood of having such problems.
3. The prior use of heroin as a secondary drug was the only significant predictor of doctors' office visits (Appendix Table 5-14).
4. Three variables significantly influenced clients' living arrangements (Appendix Table 5-16). These are the use of heroin as a primary drug prior to treatment, use of cocaine as a tertiary drug prior to treatment, and months of abstinence from all chemicals. Clients with these attributes were more likely to live in stable, more structured living arrangement. With regard to abstinence, for every month that the client abstained from all chemicals, the likelihood of having an unstable living situation decreases.
5. Treatment re-entry was significantly influenced by days of unscheduled treatment (Appendix Table 5-16).
6. Aftercare attendance and duration of aftercare were also influenced only by unscheduled treatment (Appendix Table 5-17 and 5-18).
7. Frequency of attendance to aftercare was inversely related to months of abstinence (Appendix Table 5-19).

DISCUSSION OF FINDINGS

While the results of the primary analyses were not positive, the findings consistently suggest that extended outpatient treatment, regardless of whether it is the scheduled treatment received by both controls and experimentals, or the unscheduled treatment received by either group, is associated with some positive outcomes. For instance, experimental clients and those control clients who received additional unscheduled treatment were more likely to enroll in various programs that support recovery such as outpatient treatment, AA, and aftercare. They were also less likely to have spent a night in jail. In addition, clients who received longer outpatient treatment were more likely to visit a doctor's office, suggesting perhaps that they were more responsible than controls in taking care of their physical and medical problems, as opposed to going to the emergency room in a crisis resulting from neglect while they were actively engaged in their addiction.

Other findings which were consistent for both follow-up surveys were that clients who received longer treatment had fewer problems with their boss, and also more controls reported being homemakers than experimentals. These findings may indicate that clients who received longer treatment were more responsible in terms of looking for work outside the home, as well as having a better attitude towards their supervisors once they find work.

From the three types of analyses of both the 90 and 180 days follow up surveys, there are few consistent findings on the impact of extended outpatient care for the nine client outcome areas studied. The principal conclusion is that overwhelmingly, there is no major difference between experimentals and controls. Specifically, comparing such major outcomes as the numbers of clients who relapsed on alcohol or drugs, those who gained employment, or those who had improved living situations, there were no differences between experimental and control clients.

Based on the treatment re-entry patterns, a good proportion of clients do manifest a need for more outpatient treatment than the regular prescribed 90 days.

LIMITATIONS

There are four major limitations to the results of this study. The first two relate to issues of sample size, and the other two are a function of the research design and follow-up attrition.

1. As discussed earlier, studies of this nature do not expect to find large effect sizes. Rather, medium treatment effect differences are sought. The sample size selected for the study was designed to look for "medium" size treatment effects in comparing outcomes for the experimental and control groups. Effect size differences between experimental and control groups were found to be of a smaller magnitude than that which our sample size could detect. The detection of such small treatment effects would require a much bigger sample size. While it is not possible to state unequivocally that a larger sample would have produced more statistically significant results for the same effect size, it would have established if there were differences at smaller effect size levels, and if indeed such differences were significant.

2. The size of the sample used in this study also prevented any analysis of sub-groups within the experimental and control groups. For example, it would have been desirable to look for differences in outcome between the two groups by gender, age, ethnicity, drug type or criminal justice involvement. Indeed, there are some indications in this study that with the appropriate sample size, such differences might exist. For example, the tendency for cocaine/crack users to relapse or for those clients who were employed to behave in a certain way would probably be influenced by variations in demographic or other characteristics.
3. The experimental and control group distinction was intended to mean an average difference of 90 days between the two groups in length of outpatient treatment. Because a number of individuals in both groups either continued in treatment or returned to treatment during the follow-up period, by the end of the 180-day follow-up period, the actual mean difference was just over 58 days. This may have tended to reduce the differences in treatment effects, resulting in fewer treatment related differences between the two groups.
4. The lower follow-up rate for control clients might suggest that that proportion may not have been representative of the control group as a whole. It is likely that those who were the easiest to contact may have been the least impaired. Thus it is likely that control clients in the contacted sample during follow-up were less impaired as a group than those who were not contacted. This situation could have led to the attenuated differences in outcomes between experimental and control clients.

IMPLICATIONS

One important implication of this study derives from the treatment re-entry data which we have termed treatment contamination. Treatment re-entry was the tendency for clients to continue in or re-enter treatment during the follow-up period. While it may be seen as corrupting the purity of the randomized study, it may also be viewed as another, and perhaps more important, indicator of need for additional or continued treatment.

PROGRAM RECOMMENDATIONS

Approximately one-third of the clients either remained in or returned to treatment during the follow-up period. Either the program counselors believed that further treatment was desirable, or the patients themselves sought further treatment beyond that allotted to them. Which ever way, it is conceivably an indication that an outpatient treatment duration of 90 days was certainly not enough for some, perhaps a good one-third, of the clients to ensure that they are stable enough to lead economically productive lives.

1. The definition, duration, and measurement of outpatient treatment was observed to vary immensely among treatment agencies. This needs to be addressed. One necessary step might be an attempt at standardizing the definition of what an outpatient session is, how many sessions constitute an outpatient week, or how many sessions constitute an outpatient month. What is 90 days of outpatient treatment?

2. A better understanding of the ADATSA system, and the complete DASA treatment system, would be useful. Specifically, the guidelines that govern the movement of clients from one funding source to another, and from one type of program to another, need to be more carefully observed and synchronized by treatment agencies. These seem to be the chief mechanisms for maintaining ADATSA clients in treatment for periods longer than the normal days of eligibility within the biennium.

RECOMMENDATIONS FOR FURTHER RESEARCH

The following recommendations result from this study:

1. First, further research needs to be conducted on the issue of the relationship between the duration of outpatient treatment (vis-a-vis 90 versus 180 days) and post-treatment outcomes. This research should consider a longer follow-up period, say at least a year, or perhaps follow clients through at least two episodes of outpatient treatment for those clients who do manifest a continued need and return to treatment.
2. Further studies should perhaps focus on clients' primary substance of abuse. For instance a study exclusively on cocaine/crack abusers is likely to control more extraneous factors than one which groups all alcohol and substance abusers. This would produce sub-groups of clients for which treatment effects would be more easily and meaningfully measured.
3. The relationships between types of treatment programs and types of clients should be explored. Clearly not all programs are equally useful for all types of clients.
4. Treatment outcome for alcohol and substance abusers are related to both the type of treatment received by the client and the number of times the client has come back to treatment. Thus an overall study of DASA treatment re-entry will show how programs were operating and the patterns of client treatment. Clearly alcohol and substance abuse clients seem to recycle through the treatment system. How this is related to outcome or any measure of treatment "success" is unclear.

REFERENCES

1. Aiken, L. S. 1986. "Retrospective Self-Reports by Clients Differ from Original Reports: Implications for the Evaluation of Drug Treatment Programs." The International Journal of the Addictions; 21(7):767-88.

2. Annis, H. M. 1986. "Is Inpatient Rehabilitation of the Alcoholic Cost Effective? Con Position." Advanced Alcohol Substance Abuse; 5:175-190.

3. Ashery, R. S. & McAuliffe, W. E. 1992. "Implementation Issues and Techniques in Randomized Trials of Outpatient Psycho-Social Treatments for drug Abusers: Recruitment of Clients." American Journal of Drug & Alcohol Abuse; 18(3):305-329.

4. Baekeland, F., L. Lundwall, & B. Kissin. 1975. "Methods for the Treatment of Chronic Alcoholism: A Critical Appraisal." Research Advances in Alcohol and Drug Problems, Vol 2; pp 247-327.

5. Baekeland, F., & Lundwall, L. 1975. "Dropping Out of Treatment: A Critical Review." Psychological Bulletin, 82(5), 738-783.

6. Bateson, G. 1971. "The Cybernetics of 'Self': A Theory of Alcoholism." Psychiatry, 34, 1-8.

7. Chapman, P. L. & Huygens, I. 1988. "An Evaluation of Three Treatment Programs for Alcoholism: An Experimental Study with 6 and 8 month Follow-ups." British Journal of the Addictions; 83(1):67-81.

8. Cheruvastra, V.C., Dalali, I.D., Cassuci, M. & Ling W. 1992. "Outcome Study: Comparison of Short-Term vs. Long-Term Treatment in a Residential Community." The International Journal of the Addictions, 27(1), 15-23.

9. Chick, J., Ritson, B., Connaughton, J., & Stewart, A. 1988. "Advice Versus Extended Treatment for Alcoholism: A Controlled Study." British Journal of the Addictions; 83(2):159-70.

10. Cohen, J. 1988. Statistical Power Analysis of the Behavioral Sciences. Hillsdale, New Jersey: Lawrence Erlbaum Assoc., Publishers.

11. Collins, G. B. 1993. "Contemporary Issues in the Treatment of Alcohol Dependence." Psychiatric Clin. North America; 16(1): 33-48.

12. Embree, Bryan G., & Whitehead, Paul C. 1993. "Validity and Reliability of Self-Reported Drinking Behavior: Dealing with the Problem of Response Bias." Journal of Studies on Alcohol; 54:334-344.

13. Fuller, R. K. 1988. "Can Treatment Outcome Research Rely on Alcoholics' Self-Reports?" Alcohol Health Research World; 12(3):180-186.

14. Gainey, R.R., Wells, E. A., Hawkins, J. O., & Catalano, R.F. 1993. "Predicting Treatment Retention Among Cocaine Users." The International Journal of the Addictions, 28(6), 487-505.

15. Harrison, P.A. & Hoffman, N.G. 1988. Adult Outpatient Treatment Perspectives On Admission and Outcome, CATOR Report, St. Paul, MN: CATOR.

16. Hawkins, J.D. & Catalano, R.F. Jr. 1985. "Aftercare in Drug Abuse Treatment." The International Journal of the Addictions, 20, 917-945.

17. Hoffman, N.G. & Ninoonuevo, F. G. "Concurrent Validation of Substance Abusers' Self Reports against Collateral Information: Percent Agreement vs. Kappa vs. Yule's Y." CATOR/New Standards, Inc. (Prepublication Draft).

18. Holden, C. 1987. "Is Alcoholism Treatment Effective?" Science; 236(4797):20-2.

19. Holland, R. A. & Evenson, R. C. 1984. "Prediction of Readmission in a Cohort of Alcoholics: A 2-Year Follow-Up." The International Journal of the Addictions, 19(5), 585-590.

20. Hosmer, D. W., Lemeshow, S. 1989. Applied Logistic Regression, John Willey & Sons, Inc.

21. Hubbard, R. L., Marsden, M. E., Rachal, J. V., Harwood, H. J., Cavanaugh, E. R. & Ginzburg, H. M. 1989. Drug Abuse Treatment: A National Study of Effectiveness. Chapel Hill and London: The University of North Carolina Press.

22. Hubbard, R.L., Rachal, J. V., Craddock, S. G., & Cavanaugh, E. R. 1984. "Treatment Outcome Prospective Study (TOPS): Client Characteristics and Behaviors Before, During, and After Treatment." Tims and Ludford, 42-68.

23. Institute of Medicine. 1990. Broadening the Base of Treatment for Alcohol Problems. Washington DC: National Academy Press.

24. Longhi, D., Oatis, S., Meedar, K., Spaeth, D., Van Dyck, M., Shaklee, M., Brown, M. & Hall-Milligan, J. 1991. "The ADATSA Program: Clients Services and Treatment Outcomes." Office of Research & Data Analysis, DSHS.

25. Means, L. B., Small, M.A. Capone, D. M., Capone, T. J., Condren, R., Peterson, M., & Hayward, B. 1989. "Client Demographics and Outcome in Outpatient Cocaine Treatment." The International Journal of the Addictions, 24(8), 765-783.

26. Miller, W. R. & Hester, R. K. 1986. "The Effectiveness of Alcoholism Treatment: What Research Reveals," in Miller, W. R. & Heather N. (eds.), Treating Addictive Behaviors: Processes of Change. NY: Plenum; 121-74.

27. Miller, W. R. 1992. "The Effectiveness of Treatment for Substance Abuse." Journal of Substance Abuse Treatment; 9:93-102.

28. Miller, W. R. 1988. "Follow-up: Purposes, Practicalities, and Pitfalls." Drugs in Society; 2(2):93-107.

29. Miller, W. R. 1988. "Follow-up: Purposes, Practicalities, and Pitfalls," in Research Strategies in Alcoholism Treatment Assessment. The Haworth Press.

30. Nathan, P. E. 1989. "Treatment Outcomes for Alcoholism in the U. S.: Current Research." Loberg, T., et. al. (eds.) Addictive Behaviors: Prevention and Early Intervention. Amsterdam: Sets & Zeitlinger; 87-100.

31. Noel, N. E., McCrady, B.S., Stout, R.L., & Fisher-Nelson, H. 1987. "Predictors of Attrition From an Outpatient Alcoholism Treatment Program for Couples." Journal of Studies on Alcohol, 48: 229-235.

32. O'Farrell, T. J., & Maisto, S. A. 1987. "The Utility of Self-Report and Biological Measures of Alcohol Consumption in Alcoholism Treatment Outcome Studies." Adv. Behav. Res. Ther. 9:91-125 ADAI RPO3432.

33. Simpson, D. D. & Sells, S. B. 1983. "Effectiveness of Treatment for Drug Abuse: An Overview of the DARP Research Program. "Advanced Alcohol & Substance Abuse. The Haworth Press. 2(1), 7-29.

34. Simpson, D. D. 1979. "The Relation of Time Spent in Drug Abuse Treatment to Post Treatment Outcome." American Journal of Psychiatry, 136:11, Nov.

35. Taylor, C., Brown, D., Duckit, A., Edwards, G., Oppenheimer, E. & Sheehan, M. 1986. "Alcoholism and the Patterning of Outcome: A Multivariate Analysis." British Journal of the Addictions, 81, 815-823.

36. U. S. Congress, 1983. "Office of Technology Assessment." The Effectiveness and Costs of Alcoholism Treatment.

37. Verinis, J. S. & Foreman, R. 1992. "Outpatient Care Participation and Six-Month Status: Results with an Inner City Impoverished Alcoholic Veterans Population." The International Journal of the Addictions, 27(12), 1423-1431.

38. Westermeyer, J. 1989. "Non Treatment Factors Affecting Treatment Outcome in Substance Abuse." American Journal of Drug and Alcohol Abuse, 15(1), 13-29.

39. Williams, J. R. 1975. Prospective Cohort Study of Drug Abusers Admitted to Treatment: Developing a Research Protocol. Prepared for the National Institute on Drug Abuse by the Research Triangle Institute. Rockville, MD: NIDA.

APPENDIX 1: CLIENT INFORMED CONSENT FORM

PURPOSE AND BENEFITS

This is a treatment follow-up research project looking at how persons' lives are affected by alcohol/drug treatment, especially whether additional outpatient treatment is effective in improving treatment outcomes. Your participation in this study will help the Division of Alcohol and Substance Abuse (DASA) and the state's treatment agencies to decide on how to best fund and manage treatment programs for persons with alcohol and drug problems. Persons who volunteer for this study may be assigned to an additional 90 days of outpatient services.

PROCEDURES

If you agree to be in the study you will be assigned by chance to one of two groups. One of the two groups will receive an additional 90 days of outpatient treatment. The other group will not receive those additional services. You should know that assignment to continue with outpatient treatment is entirely random. By agreeing to participate in the study you are agreeing to abide by that chance decision, whichever way it happens to be.

If you agree to be in the study we will ask you to participate in three or four half hour telephone interviews regardless of which group you are in. These interviews will be conducted by a private research firm, CATOR Inc., working with the Department of Social and Health Services. The first telephone interview would take place just after you complete your outpatient care. The others would follow at about three month intervals. In the telephone interviews you will be asked about your use of alcohol and drugs.

In the event you cannot be reached by phone we would like to obtain the names and telephone numbers of up to three persons to ask about your current phone number and address. These contact persons will be told only that we are trying to locate you because you have agreed to participate in a survey. Your contact persons will not be asked to supply any information besides your phone number and address. You do not have to supply these contact names and phone numbers to participate in the project.

RISKS, STRESS AND DISCOMFORT

Some of the questions asked in the telephone interviews are personal, but similar to questions asked as part of your treatment. There would be some risk to you if sensitive and personal information collected for this study was disclosed outside the research staff, but strict procedures to protect the confidentiality of this information are being used to prevent this from happening. You are free to not respond to questions that are uncomfortable for you.

OTHER INFORMATION

The project is committed to the protection of your privacy and confidentiality. All study forms and computer records with your name on them are confidential and will be destroyed at the conclusion of the study. Your name will not appear in any final study reports. Your answers to the interview questions will not be made available to Department of Social and Health Services staff, DASA, or staff at the treatment agency. You do not have to talk to the telephone interviewers.

Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. If you agree to be part of this study and to answer the telephone questions you still do not have to answer any particular question. You may refuse to answer any question or stop being a part of the study at any point.

This informed consent form is subject to revocation by you at any time except to the extent that the program has already taken action in reliance on it. If not previously revoked, this consent will terminate upon completion of the research project at the end of June 1994. This form meets the Federal requirements for Confidentiality of Alcohol and Drug Abuse Patient Records as outlined in DHHS/PHS 42 CFR Part 2 regulations.

To show our appreciation for your participation in the project a check for ten dollars ($10) will be mailed to your address for each telephone interview you complete.

____

Signature of Investigator

I have read the above statement to the client, and I attest that the client understands the nature of the study and has voluntarily agreed to participate.

____

Signature of Program Counselor

The study described above has been explained to me. I voluntarily consent to participate in this activity. I also agree to allow ________________________ (the treatment agency) to disclose information in my treatment record and the DASA Assessment Center to release information from my treatment record and ADATSA assessment records about my employment, health, and treatment for substance abuse to the researcher listed on this form for use in this study. I understand that future questions I may have about the research or about my rights as a subject will be answered by one of the investigators.

Date Signed ____________ Signature of Client ______________________

CLIENT NAME____

CLIENT ADDRESS______________________________________

CLIENT PHONE NUMBER__________________________________

NAME OF TREATMENT PROGRAM_____________________________

PROGRAM PROJECT COORDINATOR ___________________________

PROGRAM TELEPHONE NUMBER______________________________

NAME OF FIRST CONTACT PERSON___________________________

TELEPHONE NUMBER OF FIRST CONTACT PERSON_________________

NAME OF SECOND CONTACT PERSON__________________________

TELEPHONE NUMBER OF SECOND CONTACT PERSON_________________

NAME OF THIRD CONTACT PERSON___________________________

TELEPHONE NUMBER OF THIRD CONTACT PERSON_________________

APPENDIX 2A: OUTCOME INDICATORS, QUESTIONS ASKED IN THE QUESTIONNAIRE, AND DIFFERENCES IN RESPONSES BETWEEN EXPERIMENTALS AND CONTROLS AT DISCHARGE, 90-DAYS, AND 180-DAYS FOLLOW-UPS

Outcome and Questions	Discharge						90 Days						180 Days					
	Mean		T-Value	P	X^2	P	Mean		T-Value	P	X^2	P	Mean		T-Value	P	X^2	P
	C	E					C	E					C	E				
Alcohol/Drug Use **Have you used alcohol/drugs during the past 90 days? (yes/no response for the following drugs)**																		
1 Alcohol?					1.52	0.22					0.44	0.51					0.33	0.57
2 Marijuana/hashish?					0.01	0.94					1.01	0.32					0.01	0.94
3 Crack/cocaine?					1.24	0.27					3.74	**0.05**					0.03	0.86
4 Stimulants-amphetamines, speed?					-	-					1.38	0.24					1.51	0.22
5 Barbiturates/sedatives-sleeping pills?					0.80	0.37					1.38	0.24					0.05	0.83
6 Opiates - heroine, dilaudid, morphine?					0.80	0.37					-	-					0.05	0.83
7 Tranquilizers- Valium, Librium, ativan, zanax?					0.80	0.37					-	-					0.05	0.83
8 Hallucinogens - LSD, PCP, dust, acid?					0.80	0.37					2.78	0.10					0.05	0.83
9 Painkillers-Percodan, talwin, codeine, demerol?					1.60	0.21					1.38	0.24					4.11	**0.04**
10 Other-glue, sprays, paint, over-the counter?					-	-					-	-					-	-
In the past 3 months, what was your longest period of abstinence from all chemicals? (days)	29.40	27.90	1.92	0.06			80.30	77.90	-0.58	0.57			77.20	74.50	0.55	0.58		
How long since last use of chemicals?	2.62	2.39	-1.55	0.12			76.10	73.90	-0.42	0.67			73.80	71.00	0.48	0.63		
During how many of the past 3 months did you use any mood altering chemicals? (months)	0.24	0.40	1.49	0.14			0.33	0.43	0.75	0.45			0.42	0.51	-0.54	0.59		
During the past 3 months have your family or friends objected to your drinking or drug use?					0.77	0.38					1.71	0.19					0.31	0.58
During the past 3 months have you neglected some of your usual responsibilities because of drinking or drug use?					0.05	0.82					0.14	0.71					0.00	1.00
During the past 3 months have you drank or used enough so the next day you could not remember what you had said or done?					0.00	1.00					1.53	0.22					0.14	0.71
During the past 3 months have you had shakes or other withdrawal symptoms?					0.04	0.85					1.00	0.32					1.28	0.26
Do you now smoke cigarettes, cigars, or a pipe?					0.67	0.41					1.01	0.31					1.60	0.21

C = Control E = Experimental P = Significance Level

Appendix 2A (continued)

Outcome and Questions	Discharge						90 Days						180 Days					
	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P
	C	E					C	E					C	E				
Employment																		
Do you work outside the home? (full time, part-time, no - by choice, unemployed)					9.93	**0.02**					1.70	0.64					0.06	0.81
During the past 3 months how many months have you worked																	0.06	0.81
Full- time?	0.42	0.54	0.83	0.41			0.89	1.16	1.33	0.19							8.55	**0.04**
Part-time?	0.48	0.75	1.65	0.10			0.49	0.55	0.38	0.71							6.37	0.10
Not worked?	2.07	1.68	-1.98	**0.05**			1.64	1.47	-0.77	0.45							6.70	0.08
During the past 3 months did you have problems?																		
With a supervisor or boss?					0.96	0.33					5.63	**0.02**					5.76	**0.02**
Getting your job done?					2.37	0.12					-	-					0.03	0.87
Making mistakes?					2.76	0.10					0.20	0.65					1.27	0.26
Missing work?					0.35	0.55					3.84	**0.05**					0.05	0.82
Being late?					0.35	0.55					2.67	0.10					0.52	0.47
Getting injured?					1.15	0.28					0.81	0.37					1.64	0.20
In the last month, how many days were you absent from work?	1.50	2.40	3.60	0.06			1.05	1.34	0.41	0.68			0.46	0.61	-0.51	0.61		
During the past 3 months were you ever under the influence of alcohol or drugs while working? (never; less than once a month; 1 to 3 times a month; 1 to 3 times a week; almost every day)					1.64	0.65					2.18	0.34					0.57	0.45
Living Arrangements																		
Who do you live with?					4.40	0.49					4.10	0.66						
1. Alone?											1.38	0.24					0.19	0.66
2. With parents?											0.04	0.83					0.03	0.86
3. With spouse?											1.65	0.20					5.32	**0.03**
4. With children?											0.27	0.60					0.41	0.52
5. With roommates?											0.36	0.55					3.18	0.08
6. Have no home?											0.73	0.39					-	-
7. Other											0.50	0.48					0.81	0.37

Appendix 2A (continued)

Outcome and Questions	Discharge						90 Days						180 Days					
	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P
	C	E					C	E					C	E				
Medical Problems During the past 3 months how many times were you hospitalized/ (Number of times for each separate category below)																		
1 For illness, injury or surgery?	0.02	0.05	0.80	**0.04**			0.03	0.10	1.87	0.06			0.05	0.04	0.33	0.75		
2. For detoxification?	1.20	0.00	-1.00	0.32			0.00	0.01	1.35	0.18			0.02	0.00	1.00	0.32		
3. For psychiatric care?	0.01	0.04	1.01	0.31			0.01	0.04	0.76	0.45			0.00	0.05	-1.27	0.21		
4 For pregnancy or childbirth?	0	0	-	-			0	0	-	-			0	0	-	-		
5. For any other reason?	0.01	0.01	-0.15	0.88			1.41	0.00	-1.00	0.32			0.03	0.01	0.60	0.55		
During the past 3 months how many days did you spend in the hospital? (Days for each separate category)																		
1 For illness, injury or surgery?	3.3	57.9	12.5	**0.05**			0.09	0.38	1.62	0.11			0.02	0.11	-1.05	0.30		
2 For detoxification?	1.20	0.00	-1.00	0.32			0.00	2.45	1.09	0.28			0.02	0.00	1.00	0.32		
3 For psychiatric care?	0	0	-	-			0.18	0.50	0.68	0.50			0.00	0.15	-1.25	0.22		
4 For pregnancy or childbirth?	0	0	-	-			0	0	-	-			0	0	-	-		
5 For another reason?	0.01	0.03	0.59	0.56			0	0	-	-			0.00	0.01	1.00	0.32		
During the past 3 months how many times did you go to the Emergency Room? (Number of times for each separate category)																		
1 For illness, injury or surgery?	0.14	0.14	-0.01	1.00			0.13	0.28	1.90	0.06			0.18	0.23	-0.55	0.58		
2 For psychiatric care?	0	0	-	-			0.01	0.01	-0.23	0.82			0.00	0.04	-1.35	0.18		
3 For pregnancy or childbirth?	0	0	-	-			0	0	-	-			0.00	2.33	-1.00	0.32		
4 For any other reason?	0.01	0.02	0.40	0.69			0.01	-0.01	-0.22	0.82			0.06	0.01	1.01	0.32		
During the past 3 months how many visits have you made to the doctors office or clinic? (Number of visits for each separate category)																		
1 For illness, injury or surgery?	0.71	0.86	0.62	0.54			0.38	0.52	4.61	**0.04**			0.22	0.67	-2.05	**0.04**		
2 For psychiatric care?	0.04	0.10	1.09	0.28			0.06	0.01	-1.32	0.19			0.18	0.09	0.55	0.59		
3 For pregnancy or childbirth?	0	0	-	-			0	0	-	-			0.00	0.04	-1.00	0.32		
4 For routine exam?	0.17	0.19	0.23	0.82			0.12	0.09	-0.40	0.69			0.18	0.10	0.61	0.55		
5 For any other reason?	0.07	0.20	1.12	0.27			0.27	0.03	-2.00	**0.05**			0.11	0.01	1.44	0.16		
During the past 3 months as a driver were you involved in a motor vehicle accident (car, truck, motorcycle, boat, snowmobile)?					0.16	0.67					0.06	0.81					0.11	0.74

Appendix 2A (continued)

Outcome and Questions	**Discharge**						**90 Days**						**180 Days**					
	Mean		***T*-**				**Mean**		***T*-**				**Mean**		***T*-**			
	C	**E**	**Value**	**P**	X^2	**P**	**C**	**E**	**Value**	**P**	X^2	**P**	**C**	**E**	**Value**	**P**	X^2	**P**
Psychiatric Problems																		
In the past 3 months, was there a time that lasted at least two weeks when you felt depressed?					0.01	0.93					0.01	0.96					0.11	0.75
During such a time, which of the following did you also experience? (Separate response categories)																		
1 Loss of appetite?					1.65	0.20					0.13	0.72					0.57	0.45
2 Increased appetite?					4.45	**0.04**					0.78	0.38					0.85	0.36
3 Sleep problems?					0.67	0.42					0.03	0.87					0.07	0.79
4 Loss of energy, fatigue?					0.62	0.43					0.22	0.64					3.41	0.07
5 Loss of enjoyment in usual activities?					4.73	**0.03**					0.63	0.43					0.00	1.00
6 Trouble thinking or concentrating?					0.20	0.65					0.52	0.47					0.15	0.70
7 Thoughts of suicide?					4.44	**0.04**					0.02	0.88					0.42	0.52
Legal Problems																		
Including moving/traffic violations, have you been arrested in the past 3 months ?					0.03	0.86					0.43	0.51					0.06	0.81
During the past 3 months how many times were you arrested for the following? (Number of times for each separate category)																		
1 DWI or DUI?					0.13	0.72					0.83	0.36					0.92	0.34
2 Speeding or other moving traffic violation?					3.86	0.15					2.86	0.09					1.32	0.52
3 Disorderly conduct?					0.05	0.83					-	-					-	-
4 Assault or battery?					2.95	0.09					2.07	0.36					-	-
5 Theft, robbery, burglary?					0.13	0.72					0.83	0.36					-	-
6 Vandalism or destruction of property?					1.40	0.24					0.82	0.36					-	-
7 Possession of drugs or drug paraphernalia?					0.05	0.83					0.83	0.36					0.02	0.89
8 Sale of drugs?					1.40	0.24					-	-					-	-
9 Other?					2.99	0.22					6.29	**0.04**					0.75	0.39
Have you been in jail overnight in the past 3 months?					0.15	0.70					0.01	0.95					0.20	0.65

Appendix 2A (continued)

Outcome and Questions	Discharge						90 Days						180 Days					
	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P
	C	E					C	E					C	E				
Family/Social Relationships																		
Do any of the following describe you? (separate response categories)					3.29	0.66												
1 Part-time student											1.04	0.31					3.71	0.06
2 Full time student											1.97	0.16					0.14	0.71
3 Homemaker											3.83	**0.05**					5.94	**0.02**
4 Single parent											0.06	0.81					2.34	0.13
5 Retired person											0.72	0.40					0.69	0.41
6 Disabled person											0.86	0.36					0.68	0.41
What is your current marital status? (never married, divorced, separated, widowed, married)					5.41	0.25					3.93	0.27					5.63	0.13
Has your marital status changed in the past 3 months?					1.58	**0.03**					1.79	0.18					0.25	0.62
Treatment Re-entry Have you been in treatment in the past 3 months? (No; Yes, completed; Yes, but did not complete, Yes, still in treatment; Halfway house)					9.16	**0.03**					5.63	0.06					0.18	0.68
What type of treatment have you been in during the past 3 months? (Inpatient; Outpatient; Both)					2.18	0.34					4.84	**0.03**					2.05	0.36
Participation in 12-Step Program Have you attended aftercare in the past 3 months?					8.55	**0.01**					0.21	0.65					1.11	0.29
How long have you attended aftercare? (Days)	1.37	1.92	-2.69	**0.01**			2.58	75.08	15.45	**0.00**							2.18	0.34
Have you attended AA meetings inpast 3 months?					0.50	0.48					1.49	0.22					0.02	0.90
How often have you attended AA meetings in past 3 months? (stopped going; once a month or less; several times a month; once a week or more)					1.01	0.80					6.92	0.07					0.24	0.89
Have you attended any other support group in the last 3 months? (stopped going, once a month or less, several times a month, once a week or more)					0.06	0.80					1.91	0.17					0.06	0.81
During how many of the past 6 months did you attend other support group at least 3 times a month?					4.12	0.25					4.68	0.20					5.37	0.07

Appendix 2A (continued)

Outcome and Questions	Discharge						90 Days						180 Days					
	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P	Mean		*T*-Value	P	X^2	P
	C	E					C	E					C	E				
Other During the past 3 months have you had problems with:																		
1. Being bored?					3.05	0.08					2.33	0.13					0.80	0.37
2. Being under stress?					2.21	0.14					0.49	0.49					0.01	0.94
3. Being lonely?					8.27	**0.01**					0.97	0.32					0.00	0.99
4. Being around others who drink or use drugs?					1.05	0.31					0.08	0.78					0.07	0.79
5. Craving alcohol?					0.98	0.32					0.32	0.57					0.03	0.86
6. Craving drugs?					1.00	0.32					0.87	0.35					0.01	0.91

APPENDIX 2b: FREQUENCIES AND PERCENTAGES BY RESPONSE CATEGORY AT 90 AND 180 DAYS FOLLOW-UP

Outcome and Questions	90 Days				180 Days			
	"Yes"		"No"		"Yes"		"No"	
	No	%	No	%	No	%	No	%
Alcohol/Drug Use								
Have you used alcohol and drugs during the past 90 days?	32	18.7	139	81.3	31	20.5	120	79.5
1. Alcohol	30	17.5	141	82.5	29	19.2	122	80.8
2. Marijuana	8	4.7	163	95.3	12	8.0	139	92.0
3. Cocaine (crack)	9	5.3	162	94.7	10	6.6	141	93.4
4. Stimulants	1	0.6	170	99.4	2	1.3	149	98.7
5. Barbituates	1	0.6	170	99.4	2	1.3	149	98.7
6. Opiates	0	0.0	171	100.0	2	1.3	149	98.7
7. Tranquilizers	0	0.0	171	100.0	2	1.3	149	98.7
8. Hallucinogens	2	1.2	169	98.8	2	1.3	149	98.7
9. Painkillers	1	0.6	170	99.4	3	2.0	148	98.0
10. Other- glues, sprays, etc.	0	0.0	171	100.0	0	0.0	151	100.0
Abstinent past 3 months	139	81.3	32	18.7	120	79.5	31	20.5
Did family or friends object to drinking or drug use in the past 3 months?	14	8.2	157	91.8	18	11.9	133	88.1
Did you neglect responsibilities because of drinking or drug use in past 3 months?	16	9.4	155	90.6	16	10.6	135	89.4
Did you drink or use drugs so the next day you could not remember what you had said or done?	10	5.9	161	94.1	12	8.0	139	92.0
During the last 3 months have you had shakes or withdrawal symptoms?	6	3.5	165	96.5	12	8.0	139	92.0
Do you now smoke cigarettes, cigars, or a pipe?	144	84.2	27	15.8	130	86.1	21	13.9
Employment								
Do you work outside the home:	75	43.9	96	56.1	85	56.3	66	43.7
How many employed in the last 3 months?								
1. Full-time	62	36.3	109	63.7	60	39.7	91	60.3
2. Part-time	34	19.9	137	80.1	33	21.9	118	78.1
3. Not employed	75	43.9	96	56.1	79	52.3	72	47.7
Work related Problems								
1. With supervisor	13	7.6	158	92.4	10	6.6	141	93.4
2. Getting job done	69	40.4	102	59.6	2	1.3	149	98.7
3. Making mistakes	4	2.3	167	97.7	1	0.7	150	99.3
4. Missing work	5	2.9	166	97.1	4	2.7	147	97.3
5. Being late	4	2.3	167	97.7	5	3.3	146	96.7
6. Getting injured	5	2.9	166	97.1	2	1.3	149	98.7
Absence from work	135	79.0	36	21.0	133	88.1	18	11.9

Appendix 2b (continued)

Outcome and Questions	90 Days				180 Days			
	"Yes"		"No"		"Yes"		"No"	
	No	%	No	%	No	%	No	%
Living Arrangement								
Who do you live with?								
1. Alone	51	29.8	120	70.2	36	23.8	115	76.2
2. With parents	32	18.7	139	81.3	32	21.2	119	78.8
3.. With spouse	2	1.2	169	98.8	7	4.6	144	95.4
4. With children	9	5.3	162	94.7	14	9.3	137	90.7
6. Have no home	23	13.5	148	86.5	26	17.2	125	82.8
7. Other	1	0.6	170	99.4	0	0.0	151	100.0
	52	30.4	119	69.6	44	29.1	107	70.9
Medical Problems								
Hospitalizations in past 3 months								
1. For illness, injury or surgery	11	6.4	160	93.6	5	3.3	146	96.7
2. For detoxification	2	1.2	169	98.8	. 1	0.7	150	99.3
3. For psychiatric care	3	1.8	168	98.2	2	1.3	149	98.7
4. For pregnancy or childbirth	0	0.0	171	100.0	0	0.0	151	100.0
5. For any other reason	2	1.2	169	98.8	2	1.3	149	98.7
Clients visiting Emergency Room in past 3								
1. For illness, injury or surgery	27	15.8	144	84.2	21	13.9	130	86.1
2. For psychiatric care	2	1.2	169	98.8	2	1.3	149	98.7
3. For pregnancy or childbirth	0	0.0	171	100.0	1	0.7	150	99.3
4. For any other reason	2	1.2	169	98.8	3	2.0	148	98.0
Clients visiting doctors office or clinic in past 3 months								
1. For illness, injury or surgery	31	18.1	140	81.9	27	17.9	124	82.1
2. For psychiatric care	4	2.3	167	97.7	8	5.3	143	94.7
3. For pregnancy or childbirth	0	0.0	171	100.0	1	0.7	150	99.3
4. For routine examinations	12	7.0	159	93.0	10	6.6	141	93.4
5. For other	11	6.4	160	93.6	5	3.3	146	96.7
Psychiatric Problems								
In the past 3 months, was there a time that lasted at least 2 weeks when you felt depressed?	52	30.4	119	69.6	45	29.8	106	70.2
During such a time which of the following did you also experience?								
1. Loss of appetite	34	65.4	18	34.6	28	62.2	17	37.8
2. Increased appetite	9	17.3	43	82.7	14	31.1	31	68.9
3. Sleep problems	42	80.8	10	19.2	31	68.9	14	31.1
4. Loss of energy, fatigue	46	88.5	6	11.5	38	84.4	7	15.6
5. Loss of enjoyment in normal activities	45	86.5	7	13.5	35	77.8	10	22.2
6. Trouble thinking or concentrating	40	76.9	12	23.1	29	64.4	16	35.6
7. Thoughts of suicide	23	44.2	29	55.8	15	33.3	30	66.7

Appendix 2b (continued)

Outcome and Questions	90 Days				180 Days			
	"Yes"		"No"		"Yes"		"No"	
	No	%	No	%	No	%	No	%
Legal Problems								
Clients arrested in past 3 months	19	11.1	152	88.9	11	7.3	140	92.7
1. For DWI or DUI	1	0.6	170	99.4	1	0.7	150	99.3
2. For speeding or other moving violation	6	3.5	165	96.5	6	4.0	145	96.0
3. For disorderly conduct	0	0.0	171	100.0	0	0.0	151	100.0
4. For assault or battery	2	1.2	169	98.8	0	0.0	151	100.0
5. For theft, robbery or burglary	1	0.6	170	99.4	0	0.0	151	100.0
6. For vandalism or destruction of property	1	0.6	170	99.4	0	0.0	151	100.0
7. For drug/paraphenalia posession	1	0.6	170	99.4	2	1.3	149	98.7
8. For drug sale	0	0.0	171	100.0	0	0.0	151	100.0
9. For other reason	7	4.1	164	95.9	3	2.0	148	98.0
Have you been in jail overnight in the past 3 months:	7	4.1	164	95.9	8	5.3	143	94.7
Have you ever been arrested or charged?	136	79.5	35	20.5	120	79.5	31	20.5
Was your treatment prompted by the criminal justice system?	53	31.0	118	69.0	44	29.1	107	70.9
Family/social Relationships								
Do any of the following describe you?								
1. Part-time student	4	2.3	167	97.7	5	3.3	146	96.7
2. Full-time student	5	2.9	166	97.1	6	4.0	145	96.8
3. Homemaker	12	7.0	159	93.0	11	7.3	140	92.7
4. Single parent	23	13.5	148	86.5	16	10.6	135	89.4
5. Retired person	1	0.6	170	99.4	1	0.7	150	99.3
6. Disabled person	26	15.2	145	84.8	21	13.9	130	86.1
What is your current marital status?								
Married	18	10.5	153	89.5	20	13.3	131	86.7
Has your marital status changed in the past 3 months?	4	2.3	167	97.7	6	4.0	145	96.0
Treatment re-entry								
Have you been in treatment during the past 90 days?	33	19.3	138	80.7	21	13.9	130	86.1
Type of treatment in past 90 days								
1. Inpatient	3	1.8	168	98.2	2	1.3	149	98.7
2. Outpatient	28	16.4	143	83.6	17	11.3	134	88.7
3. Both	0	0.0	171	100.0	2	1.3	149	98.7
Participation in 12-Step Program								
Attended aftercare, past 3 months	62	36.3	109	63.7	50	33.1	101	66.9
Attended AA Meetings, past 3 months	148	86.6	23	13.4	122	80.8	29	19.2
Attended any other support group, past 3 months	47	27.5	124	72.5	44	29.1	107	70.9

Appendix 2b (continued)

Outcome and Questions	90 Days				180 Days			
	"Yes"		"No"		"Yes"		"No"	
	No	%	No	%	No	%	No	%
Other								
Numbers of clients having problems:								
1. Being bored	53	31.0	118	69.0	46	30.5	105	69.5
2. Being under stress	75	43.9	96	56.1	76	50.3	75	49.7
3. Being lonely	57	33.3	114	66.7	47	31.1	104	68.9
4. Being around users/drinkers	35	20.5	136	79.5	29	19.2	122	82.8
5. Craving alcohol	56	32.8	115	67.2	46	30.5	105	69.5
6. Craving drugs	34	19.9	137	80.1	30	19.9	121	80.1

APPENDIX 3: DIFFERENCES IN TREATMENT OUTCOME AT 90 AND 180 DAYS USING CHI-SQUARE AND T-TEST

APPENDIX 3A: DIFFERENCES IN TREATMENT OUTCOME AT 90 DAYS USING CHI-SQUARE AND T-TEST

A total of 171 clients were interviewed in the 90-day follow-up with 98 experimentals and 73 controls. The first analysis of the 90-day follow-up data was a comparison of the control and experimental groups across a number of indicators and outcome variables using either a chi-square or T-test. Statistically significant differences between the two groups were found in a number of variables (Appendix 2A).

ALCOHOL/DRUG USE

There were no differences between controls and experimentals in reported use of alcohol; marijuana/ hashish; stimulants (amphetamines, speed); barbiturates (sedatives, sleeping pills); opiates (heroine, dilaudid, morphine); tranquilizers (valium, librium, ativan, zanax); hallucinogens (LSD, PCP, dust, acid); painkillers (percodan, talwin, codeine, demerol); or other substances (such as glue, sprays, paint, or over the counter drugs) (Appendix 2A).

There was a significant difference between the two groups in the use of crack or cocaine (X^2=3.74; P=0.05), with eight controls (11% of respondents) and one experimental client reporting cocaine use (Appendix 2A). According to clinical records, 20.4% controls and 19.7% experimentals used cocaine as primary drug prior to admission (Table 4).

There were no differences between the two groups in duration of abstinence, family objection to alcohol or drug use, neglect of responsibilities, having problems remembering activities of the previous day because of alcohol or drug use, shakes or withdrawal symptoms, and smoking (Appendix 2A).

EMPLOYMENT

During the three months post-treatment period, there were no differences between the two groups in the number of clients employed, the number of months worked full-time or part-time, and the number of months not worked (Appendix 2A).

Of the 102 clients who were employed for some time during the first 90 days follow-up period, only 4 (4%) experimentals reported having some problems with a supervisor or boss versus 9 (12%) controls (X^2=5.63; P=0.02). However, five experimental clients and no controls reported missing work (X^2=3.84; P=0.05). There were no differences in clients reporting late to work, getting injured on the job, being absent from work, or being under the influence of alcohol and drugs while working (Appendix 2A).

LIVING ARRANGEMENT

There were no differences between the two groups in living arrangement (Appendix 2A).

MEDICAL PROBLEMS

There were no differences in the number of hospitalizations for detoxification, psychiatric care, pregnancy or childbirth, or other reasons (Appendix 2A).

There was no difference between the two groups in hospitalizations for illness, injury, or surgery.

There were no differences between the two groups in the total number of days clients spent at the hospital for all reasons. At discharge, experimentals spent significantly more days at the hospital for illness, injury or surgery. This difference washes out at 90 days after discharge (Appendix 2A).

There was no difference in the number of emergency room visits at 90 days after discharge (Appendix 2A).

The two groups differed significantly in doctors' office visits for illness, injury or surgery (T-value = 4.61; P=0.04) and for other reasons (T-value = -2.00; P=0.05) (Appendix 2A).

There was no difference in clients' involvement in motor vehicle accidents (Appendix 2A).

PSYCHIATRIC PROBLEMS

There were no differences between controls and experimentals at 90 days after discharge in reported psychiatric symptoms such as depression, loss of appetite, increase in appetite, sleep problems, fatigue or loss of energy, loss of enjoyment in usual activities, trouble thinking or concentrating, and thoughts of suicide. At discharge, more controls reported increased appetite than experimentals, but more experimentals reported thoughts of suicide than controls. These differences washed off at 90 days after discharge (Appendix 2A).

LEGAL PROBLEMS

Clients were asked to report any contacts with the criminal justice system during the first 90 days follow-up period. The range of possible offenses were grouped into the following nine categories:

1. Driving while intoxicated (DWI) or while under the influence of alcohol (DUII).
2. Speeding or other moving traffic violation.
3. Disorderly conduct.
4. Assault or battery.
5. Theft, robbery or burglary.
6. Vandalism/destruction of property.
7. Possession of drugs or drug paraphernalia.
8. Sale of drugs.
9. Other.

The residual category "other" was the only one which showed a significant difference, with two experimentals (2%) reporting arrests for non-specified offenses compared to 5 (7%) controls ($X^2 = 6.29$; $P = 0.04$).

There were no differences between the two groups in whether or not they were arrested during the follow-up period, or in the number of arrests for any of the other eight categories (Appendix 2A).

More experimentals were arrested for other unspecified reasons than controls ($X^2=6.29$; $P=0.04$) (Appendix 2A).

There was no difference between the two groups in whether or not clients have been in jail during the 90-day follow-up period (Appendix 2A).

FAMILY/SOCIAL RELATIONSHIPS

The two groups did not differ in the numbers describing themselves as full-time or part-time students, single parents, retired or disabled persons (Appendix 2A).

More control clients (n=8) described themselves as homemakers than experimentals (n=4). This difference was significant at the 90 days follow-up ($X^2=3.83$; $P=0.05$) (Appendix 2A).

There was no difference between the two groups in marital status, or reported marital status change during the follow-up period (Appendix 2A).

TREATMENT RE-ENTRY

Both controls and experimentals were to receive no further treatment after discharge until their next cycle of eligibility in the following biennium. However, thirty-three clients (13 experimentals and 20 controls) representing 13% experimentals and 27% controls reported having been in treatment in the preceding 90 days. This means that they received further treatment after they were discharged from the regular 90-days ADATSA outpatient treatment (for controls), or the extended 180 days of ADATSA treatment (for experimentals). However this difference was not significant at the P=0.05 level (Appendix 2A).

There was a significant difference in the type of treatment re-entered, with controls (n=20) re-entering only outpatient, while 3 of the 13 experimentals re-entered inpatient and ten re-entered outpatient treatment ($X^2=4.84$; $P=0.03$) (Appendix 2A).

PARTICIPATION IN 12-STEP PROGRAM

There were no differences in whether or not clients attended aftercare, AA meetings, or other support group in the 90 days follow-up period (Appendix 2A). Of those who attended aftercare, experimentals attended for more days than controls (T-value = 15.45; P=0.00). There were no differences in the frequency of attendance at AA meetings or other support group meetings (Appendix 2A).

OTHER PROBLEMS

There were no differences between the two groups in clients having problems with boredom, stress, loneliness, being around drinkers or drug users, or craving for alcohol or drugs (Appendix 2A).

APPENDIX 3B: DIFFERENCES IN TREATMENT OUTCOME AT 180 DAYS

USING CHI-SQUARE AND T-TEST

ALCOHOL/DRUG USE

Outcome variables from the 180-day survey were analyzed using a combination of chi-square analysis and T-tests. The results are shown in Appendix 2A. The control and experimental groups showed fewer differences in outcome at 180 days as compared to the 90-day follow-up. Only one outcome—problems with a supervisor was significantly different at both 90 and 180 days.

At the 180-day follow-up, there were no differences between controls and experimentals in reported use of alcohol; marijuana/hashish; crack/cocaine, stimulants (amphetamines, speed); barbiturates (sedatives, sleeping pills); opiates (heroine, dilaudid, morphine); tranquilizers (valium, librium, ativan, zanax); hallucinogens (LSD, PCP, dust, acid); and other substances (such as glue, sprays, paint, or over the counter drugs) (Appendix 2A).

The two groups differed significantly in reported use of painkillers (Percodan, talwin, codeine, demerol) (X^2=4.11; P=0.04), with no experimentals using while few controls reported using (Appendix 2A).

There were no differences between the two groups with respect to duration of abstinence, objection by family/friends to alcohol or drug use, neglect of responsibilities, having problems remembering activities of the previous day because of alcohol or drug use, shakes or withdrawal symptoms, and smoking (Appendix 2A).

EMPLOYMENT

There was no difference between the two groups in the number of clients employed (Appendix 2A). Of those employed, more experimentals worked full-time or part-time for two or three months of the 90 days follow-up than controls (X^2=8.55; P=0.03) (Appendix 2A). Of those employed, more controls had problems with their supervisor than experimentals (X^2=5.76; P=0.02) (Appendix 2A). There were no differences in the numbers of those who did not work, or worked only part-time (Appendix 2A). Of those employed, there were no differences between the two groups in job performance in terms of getting the job done, making mistakes, missing work, being late, getting injured on the job, being absent from work, or being under the influence of alcohol and drugs while working (Appendix 2A).

LIVING ARRANGEMENT

There were no differences between controls and experimentals in the proportions of clients living alone, or with their parents, children, roommates, or others, or those who were homeless (Appendix 2A). Significantly more experimentals lived with their spouse during the six months follow-up than controls ($X^2 = 5.32$; $P=0.03$).

MEDICAL PROBLEMS

There were no differences between the two groups in the number of hospitalizations for all reasons, days of hospitalization, or emergency room visits (Appendix 2A). With respect to visits to the doctor, significantly fewer experimentals than controls visited the doctor for illness, injury or surgery ($X^2=-2.05$; $P=0.04$) (Appendix 2A). During the first 90-day follow-up, significantly more experimentals visited the doctor's office for these reasons.

Visits to the doctor for psychiatric care, pregnancy or childbirth, routine examination, or other reasons were comparatively the same for both groups (Appendix 2A). There was no difference between the two groups in motor vehicle accident involvement (Appendix 2A).

PSYCHIATRIC PROBLEMS

Symptoms of psychiatric problems reported by both groups were the same for depression, loss or increase in appetite, sleep problems, fatigue or loss of energy, loss of enjoyment in usual activities, trouble thinking or concentrating, and thoughts of suicide (Appendix 2A).

LEGAL PROBLEMS

There were no differences between the two groups in terms of arrests for any reason, or whether clients were in jail overnight during the second 90-day follow-up period (Appendix 2A).

FAMILY/SOCIAL RELATIONSHIPS

There were no differences between the numbers of controls and experimentals describing themselves as part-time or full-time students, single parents, or disabled or retired persons (Appendix 2A).

Significantly more controls continued to describe themselves as home-makers than experimentals ($X^2=5.94$; $P=0.02$) (Appendix 2A). This observation was consistent with the first 90 days follow-up period.

There was no difference between the two groups in marital status, or reported marital status change during the follow-up period (Appendix 2A).

TREATMENT RE-ENTRY

There were no differences between the two groups in the numbers of clients re-entering treatment and the type of treatment they re-entered (Appendix 2A).

PARTICIPATION IN 12-STEP PROGRAM

There were no differences in client participation in aftercare, AA or other support program, how often they attended, and for how long (Appendix 2A).

OTHER PROBLEMS

There were no differences between the two groups in clients' experiences with respect to boredom, stress, loneliness, being around drinkers or drug users, or craving for alcohol or drugs (Appendix 2A).

APPENDIX 4: LOGISTIC REGRESSION ANALYSIS

The LOGISTIC procedure uses the maximum likelihood method to estimate the relationship between the probability of the outcome and the predictor variables. There are two types of logistic models: the binary response and the ordinal response models.

For part of this analysis, outcome variables were dichotomous or binary responses. When individual responses assume one of two values such as the presence or absence of a condition (i.e., 0 and 1, or 1 and 2), if **x** is a vector of predictors and $\mathbf{p = Pr(Y=1|x)}$ is the response probability to be modelled, the logistic regression assumes the form

$$\begin{aligned} \mathbf{logit(p)} &= \mathbf{log(p/(1-p))} \\ &= \mathbf{a + B'x} \end{aligned}$$

where **a** is the intercept and **B** is the vector of slope parameters.

For some of the outcomes used in this analysis, such as additional treatment clients received, living arrangements, and frequency of aftercare attendance, responses were restricted to a small number of ordinal values $\mathbf{1 \ldots k, k+1}$, (with $k \geq 1$). In this case, the LOGISTIC procedure fits a regression model of parallel lines "based on the cumulative distribution probabilities of the response categories, rather than on their individual probabilities" (SAS/STAT User's Guide, 1990). This type of model assumes the form

$$\mathbf{g(Pr(Y \leq i|x)) = a_i + B'x}, \quad 1 \leq i \leq k$$

where $\mathbf{a_1}$ ....., $\mathbf{a_k}$ are intercepts, and **B** is the vector of slope parameters.

APPENDIX 4a: LOGISTIC REGRESSION MODELS FOR 90 DAYS FOLLOW-UP

Alcohol/Drug Abuse

Y (cocaine use) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC (See Table 11).

Medical Problems

Y (# of Dr. visits) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC
Y (# of ER visits) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC

Living Arrangements

Y (live) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC

Legal Problems

Y (arrests) = G + S + U + T + PD + SD + TD + AC + moAC + DFC + CJRef + CJIe

Treatment Re-entry

Y (treatment (Tx))= G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx +DurUse

Y (type of Tx) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + Dur Use

Aftercare

Y (attended AC) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + DurUse

Y (duration AC) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + DurUse

Y (frequency AA) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + DurUse

APPENDIX 4b: LOGISTIC REGRESSION MODELS FOR 180 DAYS FOLLOW-UP

Alcohol/Drug Abuse

Y (Cocaine Use, past 90) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC

Employment

Y (employed at all) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrEmp

Y (emp. duration) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrEmp

Y (problem w/ boss) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrEmp

Y (missed work) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrEmp

Medical Problems

Y (# of Dr. visits) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC

Y (# of ER visits) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC

Living Arrangements

Y (live) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC

Legal Problems

Y (arrests) = G + S + U + T + PD + SD + TD + AC + moAC + DFC + CJRef + CJIe

Treatment Re-entry

Y (Txt in past 90 days) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + DurUse

Y (type of Tx) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + Dur Use

Aftercare

Y (attended AC) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + DurUse

Y (duration AC) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx + DurUse

Y (frequency AA) = G + S + U + T + PD + SD + TD + AC + MoAC + DFC + PrTx +

APPENDIX 5: MULTIVARIATE LOGISTIC REGRESSION ANALYSIS

Logistic regression allows for the use of dichotomous (binary) or ordinal level response (dependent) variables (Hosmer and Lemeshow, 1989). The purpose of the analysis is the prediction of treatment outcome as measured by client responses to questions relating to their post-treatment drug use, employment, or other outcomes at 90 and 180 days following discharge, based on their group membership (as the independent variable) or other independent predictors such as the additional or total treatment they received.

The logistic regression analyses estimated how client outcomes were influenced by key independent variables. Using the stepwise regression method, predictors were included in the model one at a time if their influence on the model score was significant at the level of $p \leq 0.05$. The variable having the highest probability of contributing to the model score was included first and the expected influences of other variables were recalculated.

The regression procedure determines the change in likelihood of an outcome due to one unit change in the predictor, or in the case of a dichotomous independent variable, a change from one value to the other. The coefficients of the predictors represent the estimated multiplicative change in the logarithm of the odds of an outcome, and the odds ratio indicates the change in odds associated with a change in the independent variable. (For a detailed discussion of multivariate regression technique see Appendix 4.)

The multivariate regression models used to analyze both the 90-day and the 180-day follow-up data are shown in Appendix 4.

Explanation of Terms:

The following are definitions of the important terms as applied in the analysis.

Predictor Variable	Independent variable used to predict outcomes.
Outcome	Dependent variable.
Intercept	Log odds of the response of interest if other independent variables are equal to zero.
Coefficients	The amount of change in the log odds of the outcome due to one unit change in the independent variable.
X2 Probability	Probability that the regression coefficient is equal to zero. Indicates whether the influence of an independent variable on the outcome is due to chance.
Odds Ratio	The estimated multiplicative change in the odds of a particular outcome, given one-unit change in the independent variable. For example, an odds ratio of two means that the likelihood of the outcome increases by a factor of two. This is the same as an increase of 100% or [(2-1)*100]. To aid interpretation, odds ratios less than one are

described in terms of a percent decrease in the likelihood. For instance, if the odds ratio is 0.5, the likelihood decreases by a factor of 0.5, which is the same as a 50% decrease or [(0.5-1)*100= -50].

RESULTS OF THE MULTIVARIATE LOGISTIC REGRESSION FOR THE 90-DAY FOLLOW-UP

The results of the multivariate regression analysis of the 90-day data showed that some outcomes were influenced significantly by the predictors. These outcomes were:

1. Alcohol/drug abuse: specifically use of crack or cocaine.
2. Employment: both being employed and having problems with a supervisor.
3. Medical Problems: doctors visits and emergency room visits.
4. Living arrangement.
5. Treatment re-entry: whether client re-entered treatment during follow-up period, and type of treatment re-entered.
6. Aftercare: whether client attended, frequency of attendance, and duration of aftercare.

The predictors specifically influencing these outcomes are discussed below.

ALCOHOL/DRUG ABUSE

The multivariate logistic regression for alcohol and drug use estimates the likelihood of cocaine use in the 90 days after discharge, based on the independent variables listed earlier. Excluding the effects of any independent variable, the estimated odds of relapsing on cocaine are approximately one in four, as shown by the odds ratio for the intercept. Two independent variables appear to have significant influence on the outcome (Appendix Table 5-1).

Appendix Table 5-1: Alcohol/drug use (Y= Cocaine/crack use in past 90 days)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-1.42	0.07	0.24
Primary Drug = Cocaine	5.82	0.01	335.46
Months Abstained from all Chemicals	-2.68	0.006	0.07

Clients who report cocaine as their primary drug at admission, are approximately 335 times more likely to use cocaine during the 90 days after treatment than clients using other primary drugs. This means that clients are much more likely to use cocaine after treatment if they primarily used cocaine before treatment.

The length of abstinence from all drugs in the previous 90 days also seems to affect post-treatment cocaine use. For each month that a patient abstains from all chemicals after treatment, the likelihood of their using cocaine drops by 93%. So, the longer patients abstain from using drugs, the less likely they are to use cocaine.

EMPLOYMENT

Employment outside the home appears to be influenced significantly by the use of marijuana as a secondary drug and by aftercare attendance in the past 90 days (Appendix Table 5-2). The model on Appendix Table 5-2 indicates that if clients did not use marijuana as a secondary drug and did not attend aftercare, the odds of their being employed are over three times those of not being employed. Also marijuana use as a secondary drug was related to employment outside the home. Attending aftercare seems to have an opposite effect: patients who attended aftercare were about 0.43 times likely (or 57% less likely) to have been employed in the 90 days after discharge. However, it is not clear whether attending aftercare interferes with employment, or if those who attended aftercare were unable to work.

Appendix Table 5-2: Employment (Y= Employed)

Predictor Variables	**Coefficient**	X^2 **Probability**	**Odds Ratio**
Intercept	1.17	0.016	3.22
Secondary Drug = Marijuana	1.16	0.011	3.19
Attended Aftercare in Past 90 Days	-0.85	0.013	0.43

Use of cocaine as a primary drug appeared as the most significant predictor of whether a client might have problems with a work supervisor (Appendix Table 5-3). Excluding the effect of this variable, the odds that clients might have problems with a supervisor are estimated at 0.038, or about 1 to 250. Clients who primarily used cocaine before entering treatment, were about ten times more likely than other clients to have problems with a work supervisor in the 90 days after discharge.

Appendix Table 5-3: Employment (y= Problem with Supervisor)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-3.27	0.0001	0.038
Primary Drug = Cocaine	2.31	0.0002	10.06

MEDICAL PROBLEMS

Of the predictors, only total days of treatment appeared to significantly influence doctors visits by clients, and its impact is very small (Appendix Table 5-4). For each additional day of treatment received, the likelihood that clients will visit a doctor increases by one percent. Controlling for the effect of this variable, clients have low estimated odds of visiting a doctor.

Appendix Table 5-4: Medical Problems (Y= Number of Doctor Visits for illness or surgery in past 90 days)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-3.63	0.0001	0.03
Days of scheduled treatment	0.01	0.017	1.01
Primary drug = cocaine	1.74	0.009	5.69

Whether clients made use of emergency room services depended more on their choice of primary drug and to some extent on the days of scheduled treatment they received (Appendix Table 5-5). Clients who used cocaine as a primary drug were 5.7 times more likely than others to visit the emergency room in the 90 days after discharge. The amount of scheduled treatment received by the client also had a very small influence on this outcome. For each additional treatment day, the likelihood of emergency room visits increases by one percent. Where neither of the above cases are true, the odds of clients visiting an emergency room in the 90 days after treatment are 1 to 33.

Appendix Table 5-5: Living Arrangement (Y= Living Arrangement)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - With parents or roomates	-1.83	0.0001	0.16
Intercept 2 - Alone	-0.43	0.3224	0.65
Intercept 3 - With children or spouse	1.63	0.0008	5.10
Attended Aftercare	0.71	0.018	2.03

LIVING ARRANGEMENT

The model on Appendix Table 5-6 estimates the odds that clients had living arrangements other than those listed in the table. The living situations were listed in order of 'stability', so living alone was considered more stable and desirable than living with parents. Similarly, living with one's children and/or spouse was assumed to provide the highest degree of stability and responsibility. Other arrangements included homelessness or living in a recovery house, as well as situations which do not fit into categories given on the questionnaire.

Appendix Table 5-6: Living Arrangement (Y=Living Arrangement)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - With parents or roomates	-1.83	0.0001	0.16
Intercept 2 - Alone	-0.43	0.3224	0.65
Intercept 3 - With children or spouse	1.63	0.0008	5.10
Attended Aftercare	0.71	0.018	2.03

The model on Appendix Table 5-6 indicates that clients were much more likely to live with parents or roommates than to have some undefined living arrangement. They were also somewhat likely to live alone. However, the odds that clients live with their children or spouse were five times less than the odds of having 'other' living arrangements.

Attending aftercare seems to inversely affect the stability of the living arrangement, since clients who do attend aftercare have twice the odds of having some 'other' living arrangements than living alone or with their parents or spouses and children.

TREATMENT RE-ENTRY

Excluding the effects of additional treatment, both scheduled and unscheduled, the estimated likelihood that clients entered treatment was much less than the likelihood that they did not (Appendix Table 5-7). Whether clients re-entered treatment depended mostly on the amount of treatment they received initially. Being in the experimental group (receiving an additional 90 days of treatment) decreased the estimated likelihood of re-entering treatment during the follow-up period by 60%. However, additional days of unscheduled treatment appeared to slightly increase the likelihood of re-entering treatment by two percent.

Appendix Table 5-7: Treatment Re-entry (Y=Whether or not Client Entered Treatment in past 90 days)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-1.33	0.002	0.27
Group	-0.93	0.028	0.396
Days of unscheduled treatment	0.02	0.002	1.02

The model on Appendix Table 5-8 estimates the likelihood of treatment types, with 'no treatment' as the reference category. Controlling for the effects of other predictors in the model, the odds of having no treatment re-entry were about 8 times higher than the odds of entering inpatient care and 9 times higher than the odds of entering outpatient care. The odds of not entering treatment decreased slightly, by two percent, as the number of unscheduled treatment days increased. Also, if the client used marijuana as a primary drug prior to treatment, the odds of not re-entering treatment decreased by 77%. A decrease in the odds of not re-entering treatment translates to an increase in the odds of re-entering inpatient and outpatient care.

Appendix Table 5-8: Additional Treatment
(Y=Type of treatment past 90 days)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - Inpatient	2.05	0.0001	7.76
Intercept 2 - Outpatient	2.19	0.0001	8.92
Unscheduled Tx days, past 90	-0.02	0.0002	0.98
Primary Drug = Marijuana	-1.48	0.02	0.23

AFTERCARE

The model on Appendix Table 5-9 estimates the likelihood of attending AA meetings, where an increase in the likelihood indicates a higher frequency of attendance. Clients were somewhat less likely to attend than to not attend AA. They were nearly one half as likely to attend two or more times per month than to attend less frequently. Being in the experimental group increased the odds of attending AA more frequently by 5.4 times.

Appendix Table 5-9: Aftercare (Y=Frequency of AA Attendance)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - 1+ times per month	-0.09	0.9071	0.92
Intercept 2 - 2+ times per month	-0.70	0.3445	0.49
Group	1.68	0.0207	5.35
Duration of abstinence from chemicals	0.93	0.00072	2.54

The length of time a client remained abstinent from chemicals also had some effect on the frequency of AA attendance. Clients were 2.5 times more likely to attend AA more frequently for each month of abstinence from chemicals. Cause and effect are not clear here, since this could mean that abstinence promotes AA attendance, or that AA attendance results in abstinence.

Clients were asked if they had attended aftercare in the previous 90 days. The model on Appendix Table 5-10 shows days of unscheduled treatment as the only independent variable that significantly influenced this outcome. Not considering the effects of this variable, clients were 2.7 times more likely to not attend aftercare. However, if a client had some unscheduled treatment, the likelihood of not attending aftercare declined (or likelihood of attending increased). For each day of unscheduled treatment a client received, their likelihood of attending aftercare increased by 3%.

Appendix Table 5-10: Aftercare (Y=Attend aftercare)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1	1.0	0.0001	2.72
Unscheduled TX days, past 90	-0.03	0.0001	0.97

The model for duration of aftercare (Appendix Table 5-11) is very similar to the previous model and shows the same basic result. A client's odds of attending aftercare increased (odds of NOT attending decreased) by about four percent for each day of unscheduled treatment they received. Here, the odds ratio of the intercepts shows the cumulative odds of a response falling into each category, or any of the lower categories. For instance, controlling for the effect of unscheduled treatment days, the odds that a client did not attend aftercare were about 3 times those that the client attended some aftercare. The odds that a client did attend for one month or less were about 4 times those of attending two or more months. Finally, the odds that a client attended aftercare for two months or less were over four times the odds of attending for three months.

Appendix Table 5-11: Aftercare (Y=Duration of aftercare)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - none - 1+ months	1.02	0.0001	2.76
Intercept 2 - <=1 - 2+ months	1.33	0.0001	3.78
Intercept 3 - <=2 - 3+ months	1.40	0.0001	4.05
Unscheduled Tx days, past 90	-0.03	0.0001	0.96

RESULTS OF THE MULTIVARIATE LOGISTIC REGRESSION FOR 180-DAYS FOLLOW-UP

The data for the 180 day follow-up were further analyzed using multivariate regression techniques. The period for which outcomes were measured in the 180-day follow-up was "the past 90 days." That is, the condition of the client, in terms of alcohol, employment, or medical problems etc. during the second three months period out of the six months follow-up period.

Like the 90-day follow-up, the results of the 180-day follow-up from the multivariate logistic regression showed that one or more independent variables contributed significantly to the prediction of some outcomes. The outcomes, and the structure of the models predicting them, were very similar to the 90-day follow-up results. These outcomes were:

1. Alcohol/Drug use: use of cocaine or crack in past 90 days.
2. Employment: problem with supervisor.
3. Medical problems: doctor's office visits in past 90 days.
4. Living arrangement.
5. Treatment re-entry: whether client re-entered treatment in past 90 days.
6. Aftercare: whether client attended aftercare, duration of aftercare, and frequency of AA attendance.

Results on Appendix Table 5-12 show that use of cocaine in the previous 90 days depended mostly on how long the client remained abstinent from all chemicals and whether the client used cocaine prior to entering treatment. For each month that the client remained abstinent from all chemicals, the odds of using cocaine decrease by about 94%. On the other hand, for a client who used cocaine as the primary drug prior to treatment entry, the odds of using cocaine increase by 250 times.

Appendix Table 5-12: Alcohol/drug use

(Y=Use of cocaine/crack in past 90 days)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-0.78	0.199	0.46
Primary Drug = Cocaine	5.45	0.034	250.0
Months Abstained from all Chemicals	-2.77	0.007	0.06

EMPLOYMENT

None of the independent variables analyzed showed any significant contribution to the prediction of number of clients employed or duration of employment at 180 days after discharge.

However, without considering the effect of any predictive variable, the estimated likelihood that clients will have problems with a work supervisor is less than one in ten (Appendix Table 5-13).

This likelihood increases further if the client is in the experimental group to about one in five, suggesting that a longer treatment duration affects this outcome. However, clients whose primary drug on entry into treatment was marijuana have a much higher likelihood of experiencing problems with a work supervisor. This likelihood is over 9 times that of clients whose primary drug is not marijuana.

Appendix Table 5-13: Employment (Y=Problem with supervisor)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-2.38	0.0001	0.09
Group	-1.73	0.041	0.18
Primary Drug = Marijuana	2.24	0.009	9.43

MEDICAL PROBLEMS

At the 180-day follow-up, only use of heroin appears to significantly influence a client's likelihood to have visited a doctor in the past 90 days. If a client's secondary drug prior to treatment was heroin, their likelihood of visiting a doctor increases by over 8.5 times (Appendix Table 5-14).

Appendix Table 5-14: Medical Problems

(Y= Visits to doctor office for illness or surgery in past 90 days)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-1.74	0.0001	0.17
Secondary Drug = Heroin	2.15	0.02	8.57

LIVING ARRANGEMENTS

The regression of living situation results in a model with three significant predictors Appendix Table 5-15). If a client's primary drug before treatment was heroin, the odds of a very 'unstable' living situation decrease by about 84%. Put another way, heroin users have a higher likelihood of living in a more structured living arrangement. The same is true of clients whose tertiary drug was cocaine. Finally, for each month that a client abstains from all chemicals, their likelihood of having an 'unstable' living situation decreases by 29%.

Appendix Table 5-15: Living Arrangements (Y= Living Arrangement)

Predictor Variables	**Coefficient**	**X^2 Probability**	**Odds Ratio**
Intercept 1 - With parents or roomates	0.09	0.85	1.09
Intercept 2 - Alone	1.77	0.0002	5.86
Intercept 3 - With children or spouse	3.36	0.0001	25.69
Primary Drug = Heroin	-1.85	0.012	0.16
Tertiary Drug = Cocaine	-1.49	0.008	0.23
Months abstinence from all chemicals	-0.34	0.04	0.71

TREATMENT RE-ENTRY

Only one variable was related to treatment re-entry (Appendix Table 5-16). Excluding the effects of other predictors in the model, the odds that a client would re-enter treatment in the second 90 days or the six month follow-up were approximately 11.5 times less than the odds of not re-entering. For each day of unscheduled treatment that clients received in those six months, the odds of re-entering treatment are expected to increase by about 1.4 percent.

Appendix Table 5-16: Treatment Re-entry (Y=Treatment in previous 90 days)

Predictor Variables	**Coefficient**	**X^2 Probability**	**Odds Ratio**
Intercept	-2.44	0.0001	0.087
Days of unscheduled Tx in past 180	0.01	0.0001	1.014

AFTERCARE

Two independent variables showed significant relationship to clients' aftercare attendance: duration of attendance and frequency of attendance. The models for both frequency and duration were explained only by unscheduled treatment, whereas, that for frequency of AA attendance by months of abstinence from all chemicals.

Controlling for the effect of unscheduled treatment days, the likelihood that clients will attend aftercare is one third the likelihood that they will not (Appendix Table 5-17). This likelihood increases about 1.5 percent for each day of unscheduled treatment in the prior six months.

Appendix Table 5-17: Aftercare (Y= Attend aftercare)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept	-1.15	0.0001	0.316
Unscheduled Tx days, past 180	0.02	0.0001	1.015

The model on Appendix Table 5-18 estimates the likelihood that clients have no aftercare versus the likelihood of aftercare lasting one or more months. Controlling for the effects of other predictors in the equation, clients are more than three times as likely to not attend aftercare than to attend for one month or more. Likewise, the odds of not attending are 4.6 times the odds of attending for two or more months and 5.8 times the odds of attending for three months.

The amount of unscheduled treatment received in the past 180 days seems the only independent variable to significantly influence this outcome. For each additional day of unscheduled treatment, the odds of attending aftercare for at least one month increase by two percent.

Appendix Table 5-18: Aftercare (Y=Duration of Aftercare)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - one months	1.14	0.0001	3.14
Intercept 2 - two months	1.53	0.0001	4.64
Intercept 3 - three months	1.76	0.0001	5.83
Unscheduled Tx days, past 180	-0.02	0.0001	0.98

The model on Appendix Table 5-19 estimates the likelihood of regular attendance at AA meetings in the second 90 days of the six month follow-up periods. Controlling for the effect of the independent variable in the model, clients are 2.8 times more likely to attend at least once per month than to have stopped attending and are about 1.3 times more likely to attend two or more times per month. The likelihood that a client will attend AA regularly increases by 2.4 times for each month of abstinence from all drugs.

Appendix Table 5-19: Aftercare (Y=Frequency of AA attendance)

Predictor Variables	Coefficient	X^2 Probability	Odds Ratio
Intercept 1 - once per month	-1.03	0.16	2.81
Intercept 2 - 2+ times per month	-0.23	0.74	1.26
Months abstinence from chemicals	-0.88	0.002	2.41

APPENDIX 6: BACKGROUND ON NEW STANDARDS

New Standards (NSI) is a clinical measurement and data management services organization, specializing in the field of behavioral health care. It is located in St. Paul, Minnesota and has been providing measurement products and services on a nationwide basis for over 10 years. NSI is uniquely an independent clinical measurement firm which not only delivers outcomes measurement services, but also engages in the design of assessment instruments and the development of software. It draws from a strong background in the performance of clinical services which, when combined with its psychometric skills, yields a facility at converting clinical phenomena and events into measurable items. In other words, NSI is exceptional at "putting numbers to" aspects of care which otherwise appear to defy analysis.

Specific to outcomes measurement, NSI evaluates the effectiveness of treatment for problems in Mental Health, Chemical Dependency (CD), and Eating Disorders. It is the largest evaluator of CD treatment effectiveness in the world. Its data base of confidential patient records, numbering in the tens of thousands, is the most extensive of its kind. Through the years, NSI has evaluated nearly 150 different private treatment programs throughout the nation, as well as the statewide delivery of care in 4 different States and a network of care in Canadian provinces. Clients have included providers, employers, and managers of care. Many of these clients have retained the service for years, relying upon ongoing measurement as a key component of clinical and management practices.

NSI outcomes data provide a foundation for improvements in the delivery and management of care. Exceptional clinical performance as well as areas of improvement are identified. Factors in recovery are isolated and weighed. Distinctions in need and prognosis are drawn based upon patient severity, level of care, and type of intervention. This experience in evaluation has contributed to NSI's success in the design and marketing of a battery of assessment instruments which respond comprehensively and objectively to the discrete and particular demands of different decisions in the clinical process (e.g., screening, diagnosis, placement). These instruments share a high level of psychometric validity, clinical relevance, and ease of use.

Currently, the company is engaged in a project which will yield an automated battery that links its assessment instruments in the form of a "decision tree". This technology will enable patient self-report to drive the assessment process in a highly economical way, and will form the foundation for integrating assessment functions with the measurement of treatment outcomes.

NSI knows how to manage large volumes of data. In addition to operating its aggregate data base (which includes manipulation of thousands of patient records and hundreds of variables per record), it has automated instruments and developed a wide variety of checklists and forms which facilitate large-scale data capture and comparability.

Current work involves the development of a turnkey automated system for a state to support the ongoing collection of treatment and cost data and continuous analysis of the cost-effectiveness of different types and aspects of treatment.

Finally, the scientific credibility of the company is solidly established. Over the years, its work has been widely published in peer-review journals and presented at numerous and broadly diverse professional and technical conferences. Its products and services have been subjected to a continuing series of research projects and field trials to ensure their validity and value.

Washington State
DEPARTMENT OF
SOCIAL & HEALTH
SERVICES

4.21

BEST COPY AVAILABLE